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ABSTRACT

Third in a series, the monograph summarizes the key evaluation issues, design approaches, and statistical techniques used in conducting the 1980-1983 impact evaluation of Indian Education Act Title IV Part A programs. The monograph describes the major problems in evaluating the program to determine the degree of its positive contribution to meeting the special educational and culturally related academic needs of American Indian/Alaska Native children and youth. The overall evaluation comprises four studies: the Preliminary and Exploratory Study, the Alternative Resources Study, the Small Projects Study, and the Local Projects Impact Study (the major focus of the evaluation). The monograph also discusses the six basic types of information used in the studies (descriptive data about project operations and funding; mediating variables that explain impact measures; confounding variables; and impact data on students, parents and Indian communities, and school districts), and describes in detail the design for sampling, gathering, and analyzing the data. The monograph includes a discussion of major research questions, research approaches, and design issues; and explains the implementation of the evaluation design and methods. (SB)

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MONOGRAPH 3:

STUDY DESIGN AND METHODS USED FOR "THE EVALUATION OF THE IMPACT OF THE PART A ENTITLEMENT PROGRAM FUNDED UNDER TITLE IV OF THE INDIAN EDUCATION ACT"

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PREFACE

This study was conducted for the Office of Program Evaluation of the Department of Education. Pursuant to a competitive procurement, work began on the study in the fall of 1980, most data were gathered during the fall and spring of the 1981-81 school year, and analyses were performed and the report written during 1982 and the spring of 1983. In commissioning the study, the Office of Program Evaluation sought an analytic description and impact oriented evaluation of the Indian Education Act's Part A Program as implemented in public schools. The purposes of the study were to assist Congress and administrators in the Department to manage the program and make decisions with respect to its future.

From the study's inception, a Technical Advisory Panel of Indian educators provided valuable support. They participated in the study's design, review of data collection forms and procedures, and data analysis plans. Panel members were: Mike Charleston (Oklahoma City, OK), Teresa La Fromboise (Lincoln, NE), Grayson Noley (University Park, PA), Edward Thomas (Ketchikan, AK), Joseph Trimble (Bellingham, WA), and Noah Woods (Maxton, NC). Each of the members of the panel devoted considerable time and attention to the study, which was greatly appreciated.

Development Associates also acknowledges the valuable participation in the study of Bear Chief and Associates of Missoula, Montana. Bear Chief was an important subcontractor throughout the study and was involved in all of its phases. In addition, several other Indian organizations and firms as well as scores of consulting specialists made significant contributions. Mike Charleston, Joseph Trimble, Grayson Noley, Lloyd Elm and Teresa La Framboise made particularly important contributions in the analyses of data and preparation of this report. John Tippeconnic provided valuable assistance at various points throughout the study, as did others at the Center for Indian Education at Arizona State University. The American Indian Institute at the University of Oklahoma hosted the training of field data collection teams and made other significant contributions in a number of areas. The involvement of each of these individuals and organizations was highly important.

Throughout the study, the involvement of Dorothy Shuler, project officer, was substantial, and she was a positive force at all times. At various times, others in the Department of Education, particularly Patsy Mathews, then of the Indian Education Program, and Keith Baker of the Department's planning staff, provided particularly useful advice and were otherwise quite helpful. Finally, we wish to acknowledge the literally thousands of Indian and Alaska Native students, parents and educators who participated in the study and the staff of the local school districts who were involved. With almost no exceptions, these individuals were gracious and most helpful.

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THE STUDY DESIGN AND METHODS USED FOR THE EVALUATION OF THE IMPACT OF THE PART A ENTITLEMENT PROGRAM FUNDED UNDER TITLE IV OF THE INDIAN EDUCATION ACT

CHAPTER 1: INTRODUCTION

This monograph provides a summary of the key evaluation issues, design approaches, and statistical techniques used in conducting the impact evaluation of the Part A Entitlement Program of the Indian Education Act. In 1972, the Indian Education Act was passed by Congress, and an Office of Indian Education was created within the U.S. Office of Education. For the first time, a major Indian education program was located outside the Bureau of Indian Affairs (BIA). Although there were difficulties in the initial implementation of the Act, the Office of Indian Education was able to provide funds to public school districts for the first time, in 1973, to meet the "special educational needs of Indian students."

The Part A Program provides formula grants, upon approved applications, to local educational agencies provided they meet specified criteria relative to the enrollment of Indian children within their districts.[1] To receive a grant, eligible school districts are to have established an Indian parent committee; to have conducted a needs assessment to determine the special educational needs for the Indian students enrolled in their schools; and to have developed a program plan based upon those identified needs.

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[1] A local education agency is entitled to receive a grant if the number of Indian children enrolled in that agency's schools either totals ten or more, or represents at least half the total enrollment for that agency. However, an agency may apply without regard to the enrollment requirements if it is located in Alaska, California or Oklahoma, or is on, or in proximity to, an Indian reservation.

The Part A projects are, on the average, small, provide supplementary services to Indian/Native students, and are quite diversified in terms of program emphasis and intensity of program activity. In the 1981-82 school year, the per-student expenditure by the Part A projects surveyed was about $221; they had a median budget of $26,450.

Federal regulations state that "projects may focus on basic skills instruction or other academic areas or on Indian culture as related to academic skills . . . and projects are encouraged to use culturally-based materials and techniques in program activities."[2] The permissible activities are quite broad, and include those which are not strictly academically oriented but which may be deemed important activities for American Indian/Alaska Native students. Examples include home-school liaison services; traditional Indian arts, crafts, music, and dance; comparative cultural studies; school-related expenses; and native language arts.

Many project activities are assumed to positively affect students' self-esteem, pride, attitude toward school, and attendance. Thus, the Program may have had impact upon students in many areas in addition to academic improvement.

Project impacts upon participating students were not the only evaluation concern. Federal regulations also require the involvement of parents in a parent committee. In fact, formation of a parent committee is a prerequisite to Part A funding. In addition, the legislative history of the Indian Education Act reveals a concern with the educational context in which Indian/Native students are expected to learn. Thus, other areas of potential impact consist of effects upon the involvement of parents in their children's education, as well as impacts upon the school districts, schools, and staff.

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[2] The Indian Education Act (P.L. 92-318).

It was acknowledged at the onset that the major evaluation problem was the design a flexible evaluation approach that dealt accurately and sensitively with identifying and measuring past and current impact, within and across all dimensions of possible program emphasis, without misrepresenting the Program and its importance. This was acknowledged as difficult because, as noted, projects are small, supplementary in nature, and quite diversified in terms of program emphasis and intensity of program activity.

Another major problem also existed. In spite of an acknowledged need to assess the impacts of the Part A Program after nine years of operation, such evaluations could well be viewed in negative and threatening terms by those involved, thus affecting their full cooperation. Moreover, from the Indian perspective -- because of the unique nature of the program -- there was the perceived danger that inappropriate measures or standards might be used in evaluating the Program. Thus, the Program could be misrepresented and misjudged in its importance, and its impacts upon Indian/Native students, the Indian community, and the schools could be misinterpreted.

With such considerations in mind, a great deal of time and effort was invested in developing an evaluation plan responsive enough to assess accurately and sensitively the myriad possible past and current Part A Program impacts, recognizing all the while that the Program was not the only intervention likely to affect Indian students. Besides regular school programs, Chapter 1, Johnson O'Malley Act programs, and other federal efforts, tribes and Indian organizations in many areas operate special educational programs focused on academic and cultural activities. Specifically, the evaluation was designed to:

- Capture and describe in detail the programmatic and individual project elements, as well as the characteristics of the school districts, communities, and those individuals who may have been accepted by the program; and
- Assess the extent to which program activities, both academic and non-academic, have contributed to discernible impacts over several dimensions -- human, programmatic, and organizational.

Thus, this study may be conceived as a multidimensional evaluation of the Part A Program, focused upon identifying and explaining the results of the Program since its inception in 1972. It includes an inquiry into and analysis of: (a) the Program's origins and initial intent; (b) the operations of the Office of Indian Education; and (c) local level operations, results, and ongoing needs based on visits to a representative sample of local projects.

Finally, several broad goals were outlined relative to the conduct of the overall study:

- To gain a thorough understanding of the Part A Program -- its goals, purpose, history, characteristics, and operations at all levels, as well as its place in the education of American Indian and Alaska Native children;
- To maintain and ensure sensitivity to, and involvement of, the Part A Program participants, as well as the potential and eventual users of the study results;
- To involve Indians in all aspects of the study, especially the initial design, instrument development and field testing, data collection, analysis, and interpretation of the results;
- To develop a sound evaluation design responsive and flexible enough to:
    (1) Capture the diverse nature of the Part A Program;
    (2) Incorporate emerging concerns into existing design, data collection, and analysis procedures; and
    (3) Adopt alternative approaches and strategies as required to mesh real world conditions with the conceptual evaluation model; and
- To insure a representative sample of projects in the study in all types of settings (urban, rural, reservation, near-reservation, and village) and individuals who are involved in and impacted by the Program.

CHAPTER 2: OVERVIEW OF THE STUDY DESIGN

To provide an overview of the overall impact evaluation design, the study may be viewed as being divided into four discrete studies for the purposes of information acquisition and data collection (see Table 2-1). They are:

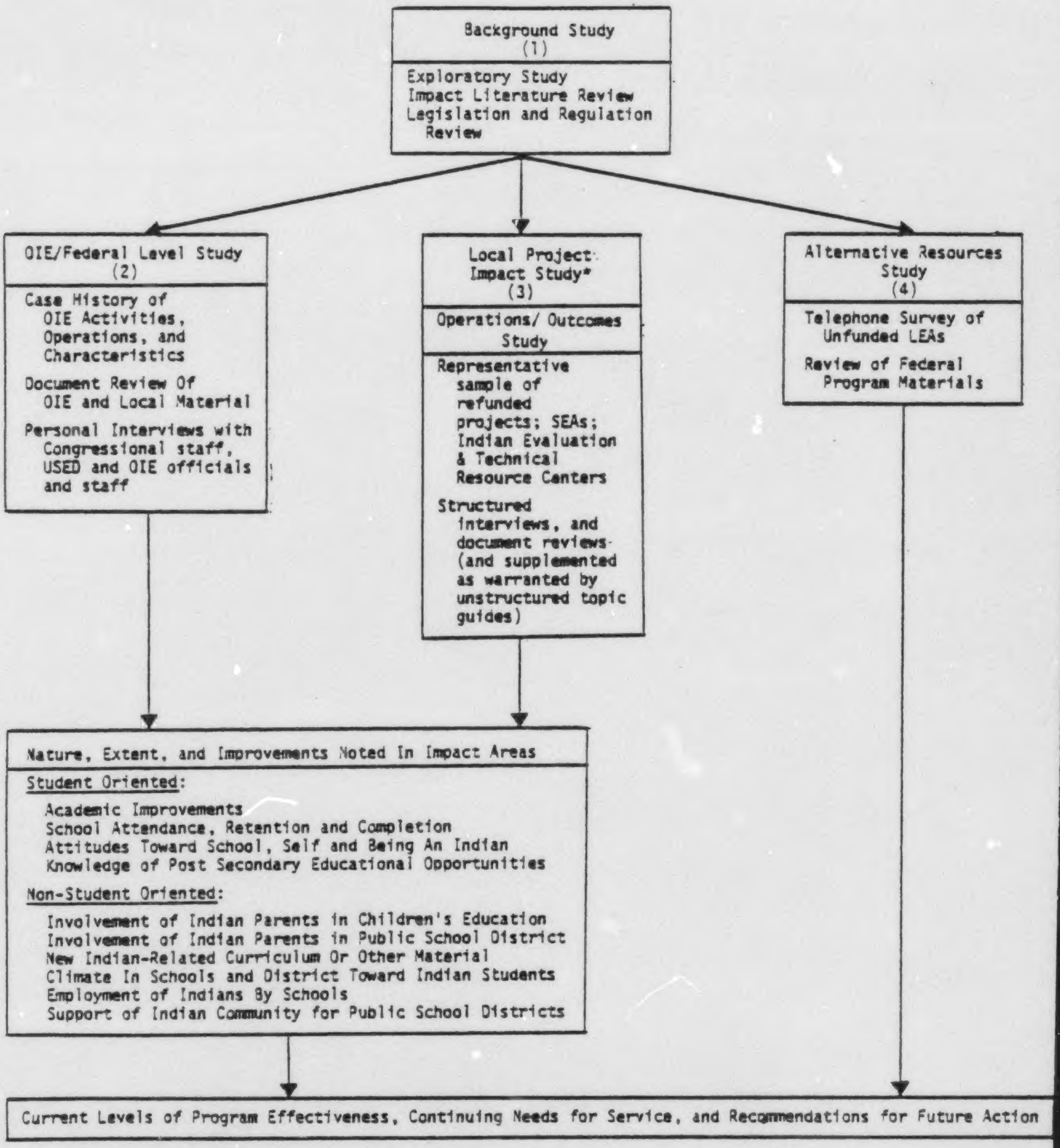
The Preliminary and Exploratory Study;
The Local Projects Impact Study;
The Alternative Resources Study; and
The Small Projects Study.

The Preliminary and Exploratory Study was essentially an evaluability assessment and information acquisition endeavor, designed to provide a comprehensive background of information relative to:

- A review of literature pertinent to Indian education evaluation, specifically, and impact evaluation literature, in general;
- A review of the Part A legislation, hearings, and regulations;
- The development of a case history of the Indian Education Program -- its activities, operations, and characteristics;
- A review of Part A documents, applications, and other local project and district material on file with the Department of Education;
- Personal interviews with congressional staff, and Department of Education and IEP officials and staff; and
- Visits to nine Part A projects representing a diverse cross-section of settings, sizes, and types of program activities.

The results of these activities provided the framework for the development of the conceptual impact evaluation design which, in turn, provided a guide for the evaluation of potential Part A impacts. However, the diversity of expectations, needs, activities, and settings became clear during this early assessment. Except at the broadest of levels, there were substantive disagreements among key staff within the Department of Education and also among congressional offices regarding the purpose of the Part A Program and criteria by which it should be assessed. For some, the Program was perceived primarily in terms of improving basic academic skills. For others, its primary purpose was to heighten awareness and understanding of Indian history and culture, or to increase student pride and

TABLE 2-1
OVERVIEW OF IMPACT EVALUATION DESIGN


Background Study
(1)
Exploratory Study
Impact Literature Review
Legislation and Regulation Review
OIE/Federal Level Study
(2)
Case History of OIE Activities, Operations, and Characteristics
Document Review Of OIE and Local Material
Personal Interviews with Congressional staff, USED and OIE officials and staff
Local Project Impact Study*
(3)
Operations/ Outcomes Study
Representative sample of refunded projects; SEAs; Indian Evaluation & Technical Resource Centers
Structured interviews, and document reviews (and supplemented as warranted by unstructured topic guides)
Alternative Resources Study
(4)
Telephone Survey of Unfunded LEAs
Review of Federal Program Materials
Nature, Extent, and Improvements Noted In Impact Areas
Student Oriented:
Academic Improvements
School Attendance, Retention and Completion
Attitudes Toward School, Self and Being An Indian
Knowledge of Post Secondary Educational Opportunities
Non-Student Oriented:
Involvement of Indian Parents in Children's Education
Involvement of Indian Parents in Public School District
New Indian-Related Curriculum Or Other Material
Climate In Schools and District Toward Indian Students
Employment of Indians By Schools
Support of Indian Community for Public School Districts
Current Levels of Program Effectiveness, Continuing Needs for Service, and Recommendations for Future Action

*Approximately 80-90% of the Evaluation resources are devoted to this study (Study 3). The purpose of studies 1 and 2 are to provide important contextual and interpretive information relevant to the impacts of local projects. The purpose of Study 4 is to address several topics of particular interest to Congress and to provide information which will be useful in considering the continuing need for and directions of the Part A program.

self-esteem. Also, for many (but not all) the primary goals of the Program included bringing about attitude and policy level change within local education agencies. Similarly, many also considered increases in the involvement of Indian parents in the local school system a critically important dimension of the Program.

These varying perspectives were held by persons with legitimate interests and influence in the Part A Program, and had been communicated, at least to some extent, as priorities to local project staffs. Thus, in planning the evaluation, it was decided to gather evidence of and report on impacts on each of these areas. However, it was recognized that because of limited project resources and the federal mandate that projects be locally designed, it would be inappropriate to expect most projects to have discernible impacts in all.[1]

The Local Projects Impact Study was the central focus of the evaluation, and its is the major focus of this report. In brief, the data for this study were collected from a stratified random sample of 115 of the Part A projects funded during the 1981-82 school year, which were funded for three consecutive school years (1979-80, 1980-81, 1981-82) and which reported having more than 30 Indian students in 1980. By screening out projects which had not been consistently funded and projects with small numbers of students, the study was assured a sample of projects with sufficient numbers of students and with a history that would allow the gathering of longitudinal data which could be used to provide an assessment of project impacts over a period of time. A total of 865, or 85 percent of all Part A public school projects funded during 1981-82, remained in the universe after screening (the others were included in the Small Projects Study or the Alternative Resources Study described below). Interview or questionnaire data were gathered from a variety of respondents from each of the 115 projects in the study sample. School records were also consulted for information concerning students, project activities, and the characteristics of the school district itself.

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[1] A description and the results of these preliminary activities are presented in: Reimer, J. Interim report on the Part A Program: A review of findings to date, March 1981.

In essence, the impact evaluation was a major effort that necessarily involved many tasks. Summarized, they are:

- Identifying the overall dimensions of the data requirements (i.e., types of interviews, questionnaires, document review forms and formats, individual item and question development, and selection of impact indicators);
- Developing, field testing, and modifying of the structured data collection instruments;
- Defining survey populations of projects, students, parents, teachers, etc., from which samples would be selected;
- Determining the sizes of various samples;
- Designing and selecting, the samples;
- Establishing communication with project directors and staff, teachers, students, parents, and others as needed to perform data collection operations;
- Determining data collection periods;
- Identifying, selecting, and training field staff;
- Conducting field data collection;
- Processing data and developing storage procedures;
- Developing the analytic plans; and
- Developing plans for the unstructured qualitative aspect of the data collection.

Tables 2-2 and 2-3 provide a listing of the data collection instruments and the number of respondents or school districts from which data were obtained for each instrument.

The Alternative Resources Study examined the federal, state, and local funding resources, other than funds from Part A of the Indian Education Act, for the education of Indian/Alaska Native children. The results are based on a probability sample of school districts with Indian students, including districts which do and do not receive Part A funds. Projects which were not visited as part of the Impact Study were contacted by telephone, and a review of pertinent federal program materials was also conducted.

TABLE 2-2

RESPONDENTS TO FALL AND SPRING INTERVIEWS AND QUESTIONNAIRE ADMINISTRATIONS

Respondents	Fall	Spring
District administrators*	154	109
Part A project directors	114	108
Part A staff	114	413
Tutors of Indian students	--	329
Indian students, grades 4-6**	5,393	5,201
Indian students, grades 7-12**	8,145	7,369
Part A parent committee chairpersons	114	--
Part A parent committee members	--	290
Parents of Indian students	--	1,546
Elementary and secondary school principals	--	450
Regular classroom teachers of Indian students	--	1,307
Indian community/tribal leaders not associated with Part A	--	102

*Fall=Superintendents and supervisors of Part A project directors. Spring=Supervisors only.

**A discussion of the representativeness of the student sample is presented in Chapter 3, Sampling Plan section, part 3 (f).

TABLE 2-3

DATA COLLECTED FROM SCHOOL RECORDS

Type of Data Collected	Number of Cases*
School district characteristics	115 districts
School attendance of Indian students (5 years per student, where available)	8,376 students
Reading and math achievement test scores (spring 1981)	6,425 students
Characteristics and progress of tutored Indian students**	3,123 students
High school completion data on 5 cohorts of Indian sophomores (1971-1979)	2,098 former students

*School record data were collected only once, either during the fall or spring, depending on the type of data.

**Tutors completed forms for each tutored student.

Finally, the Small Projects Study involved the examination of Part A projects receiving $5,000 or less in 1981 and/or serving 30 or fewer Indian students. All 32 of these projects were selected, and a review of their application materials was conducted at the Indian Education Program Office in the Department of Education.

Telephone interviews were attempted with project directors, parent committee chairs, and a district administrator at each project. Various materials were also requested and later reviewed. Three of the most promising projects were visited and more detailed data gathered.

The results of the Alternative Resources and the Small Projects studies, along with the data collected during the Local Projects Impact Study, provide:

- A balanced and detailed picture of the current levels of Part A Program involvement and effectiveness at the local level;
- An estimate of the continuing need for federal assistance in the education of Indian children; and
- The necessary basis upon which to make recommendations for future action with regard to Part A and federal involvement in the education of Indian children.

The evaluation required a variety of descriptive and impact data about the projects, the people directly or indirectly involved, and the settings (e.g., community and school districts) that surround them. Building upon the knowledge and information acquired during the Preliminary and Exploratory Study, an evaluation design was developed which evolved as the study progressed. Indicators of potential impact were sought and assessed from many different sources and over several different dimensions, as noted in Table 2-4 (Analytic Framework). These multiple impact indicators from multiple sources were used to:

- Detect any form of impact on that dimension, if such had occurred;
- Obtain a consensus or agreement among findings from different sources that an impact had occurred; and
- Obtain a fuller and more balanced picture of the types of impacts that might be attributable to Part A, so the extent of Part A effectiveness could be better understood and the findings more easily interpreted to various audiences.

Broadly speaking, the following six basic types of information were collected within the scope of a quasi-experimental impact evaluation:

- Descriptive data concerning project operations and funding;
- Mediating variables that "explained" impact measures;
- Confounding variables (i.e., factors at the core of Part A operations, such as funding from other sources, which make it potentially difficult to attribute outcomes to Part A);
- Impacts on students;
- Impacts on parents and Indian communities; and
- Impacts on school districts.

The descriptive data were used to present a profile of the:

- Students and communities served;
- Sources of project funding;
- Typical program components and services;
- Project staff characteristics; and
- LEAs, schools, and so forth.

Various descriptive statistics, such as means, medians, and percentages, were presented. Graphic techniques such as trend lines were used where helpful. Cross-tabulations were used to indicate characteristic patterns for project types, student grade-level ranges, and other breakdowns of special interest. This information provided a thorough understanding of the data available for impact analysis purposes.

To that end, a series of balanced and comprehensive impact analyses was conducted. The project, as well as the student, parent, and other data sources, were used as units of analysis. A variety of techniques was used for impact analysis purposes. Trend analysis techniques (including plotting of group means) were used to detect shifts over time and/or between groups in various behavioral and attitudinal project-level impact measures. Such results indicated whether project operations had positively affected the rate and extent of impacts gathered from the district, parents, teachers, tribal leaders, etc. Factorial analysis of variance, multiple linear regression, general linear models, and multivariate analytic techniques were used to determine whether shifts in student-level impact measures (e.g., attendance, self-esteem, cultural knowledge, attitudes, and overall progress in school) indicated a relationship between student participation in Part A activities and ensuing impacts. These analyses were conducted in a way that makes it possible to ascertain the types of projects in which impacts were the greatest. The statistical significance of the findings and whether or not their size represented meaningful or practical differences were used in interpreting the results. As mentioned earlier, factors that represented alternative explanations for the results were also controlled for or taken into account when conducting the impact analyses.

Extensive quality control procedures were built into the data collection plan, including:

- Formal training of field staff;
- Specific staff responsibilities on site;
- Monitoring data collection rates of all types;
- Coordination of field staff and team leaders with the contractor's central office supervisory personnel; and
- Procedures for dealing with contingencies experienced on site.

Most analyses were performed on a data base that was designed to permit both file (i.e., particular respondent) and subfile (i.e., subgroups of respondents) analyses. This was done because certain analyses were better prepared at the project level, and other analyses at the student, parent, tutor, or other individual respondent level.

The structure of the qualitative and quantitative analysis procedures are quite different. The qualitative or naturalistic approach in its pure form does not provide a structure for the analysis of the "raw information" collected. The information is not necessarily collected in a manner which allows consistent aggregation for systematic, statistical analysis procedures. Nonetheless, systematic aggregation is possible and desirable at some levels, especially since the information gathered may be rich in detail and locally specific in content.

The "analysis process" used in this study therefore involved searching for themes, consistencies, inconsistencies, direct personal experiences, portrayals, faithful representations, etc. This was a process of winnowing out issues and questions. The analysis and compilation of the results was not necessarily a different and discrete operation or activity, different for each approach. Viewed as being complementary to each other, both approaches and their results were combined to fill gaps in the information/data base (although information and data were collected in different fashions). Specifically, the Topical Qualitative Studies were reported for the most part in conjunction with the quantitative survey results.

Finally, impact questions addressed by topical studies were subgrouped where possible under broader research questions. Results for topical studies were synthesized both for the narrow impact questions addressed, as well as for the broader questions. Where topical studies addressed identical or related impact questions (as did the survey instruments), the results of both were compared/synthesized. Similarly, where qualitative studies incidentally picked up information relevant to results of the survey, this information was incorporated in presenting the quantitative results of the research.

Organization and Context of the Findings

From the outset, the Department of Education made it clear that this study was of concern to a variety of quite different audiences. Various groups within the Department, the Congress, the Native American Community, the state education agencies, and the local school districts have an interest in particular findings and the results overall. Early in the study, it became clear that not all potentially relevant issues or questions could be addressed within the existing resource limits. It was also clear that the various audiences would not always agree in their interpretations of the Part A Program's historical context, study findings, or the preferred style and format for presenting results.

Consequently, various strategic decisions and accommodations have been made throughout. With respect to analytic content, the study team attempted to address the key issues raised early in the study by congressional staff, responsible persons in the Department of Education, and members of the Indian community on the study advisory panel. Regarding the context of findings, a middle ground has been sought. The final report does not purport to thoroughly address the long and complex history of Indian education in the United States. Similarly, a middle ground was sought with respect to interpretation and presentation of results. Where deemed appropriate, interpretations of findings are offered and extended analyses were made. Elsewhere, however, the data are largely allowed to speak for themselves, as their meaning is embedded in controversies over values or interpretations of legal or historical facts.

Presentationally, the object has been to provide sufficient detail to permit a fair and complete assessment of the study's findings and of the Part A Program without overwhelming the reader with a mass of specifics or technical terms.

Indian Involvement in the Study

The Department of Education required that the final design and implementation of the study make heavy use of Indian professionals. Thus, from its start, the study was designed to provide for the substantive involvement of Indian educators at all points. For example, as much cultural matching of interviewers with respondents as possible was required in order to increase the probability of gaining valid and useful data. Similarly, it was required that Indian researchers play a substantive role in the study's conceptual design, the development of data collection instruments, and the data analysis and interpretation.

Consequently, during the early stages of the evaluation, Development Associates identified and initiated ongoing consultations with knowledgeable Indian and Alaska Native educators who possessed a variety of experience and expertise. These individuals were known to have a thorough knowledge and understanding of Indian communities, organizations, and education in general, and of the Part A Program in particular. These consultations and involvements provided insights and strategies bearing upon the study's design, implementation, and analysis. They were also quite helpful in establishing the study's credibility within the Indian and Native communities and in securing cooperation from schools, both of which facilitated data collection throughout the study.

In addition, a technical advisory panel to the study was constituted. This panel was made up of Indian educators and researchers from across the country who met to review and advise the study's staff with respect to study design, data collection, and analyses. They participated in decisions regarding areas and strategies of investigation; reviewed all instrumentation; participated in sampling and data collection decision-making; reviewed preliminary data and advised regarding the analytic plans; and individually reviewed and commented on drafts of this report. Throughout the study, all of these individuals devoted significant time and energy to the effort. Consistently, they were free in their criticisms of draft materials and made valuable contributions to the evaluation overall.

The study also utilized over 60 Indian professionals as paid consultants at various critical points. Throughout, Bear Chief and Associates (an Indian owned and staffed consulting firm) served as a subcontractor to Development Associates. During the instrument development stage, some 40 Indian educators -- teachers, project directors, and university professors -- reviewed and offered revisions to the various questionnaires. Data collection itself was undertaken virtually entirely by Indian or Alaska Native professionals. Field staff were provided an intense week of special training prior to the fall data collection and a second week of training prior to the project visits in the spring. The field staff consisted of university faculty members, upper level graduate students with prior work experience, and experienced professional staff from Indian firms or organizations with whom subcontracting arrangements had been made.

Data analysis also included heavy Indian involvement. Native American graduate students at Arizona State University conducted the coding of all open-ended questionnaire responses from Native American interviewees. It was clear during the early analytic phase of the study that Indian educators could more accurately analyze the responses of Indian parents and project staff than could coders with little cultural or programmatic insight. Similarly, Native American graduate students from Pennsylvania State University were used to provide ratings based on a qualitative assessment of recorded data of the cultural components of the Part A projects. More substantively, several Indian researchers were directly involved in planning and conducting statistical data analyses and writing draft sections of the study's reports.

Cooperation with Local Education Agencies

The evaluation design required considerable time and cooperation from the local school districts that became involved. In addition to Part A Program staff and members of the Indian community, superintendents, assistant superintendents, principals, and teachers were surveyed and files reviewed. Frequently, developing the sampling frames for the selection of Indian students and securing school attendance records and achievement test scores on individual students involved considerable time from school personnel.[2] With few exceptions, school districts readily agreed to participate in the study and maintained their cooperation throughout the school year.[3] Typically, school personnel were interested in their Part A projects and desired to assist in the Program's evaluation.

Local cooperation of school officials was encouraged somewhat by offering to provide local staff with feedback on their projects. To accomplish this, the study design called for supplying project staff with information which could be useful in planning future activities collected from their sites as soon after the spring data collection as possible. Thus, during the fall and early winter of the 1982-83 school year, the participating projects were sent summarized results of surveys of regular classroom teachers, Indian students, and Indian parents at their sites. Also, most projects were provided with analyses of Indian student achievement test scores and with school attendance data comparing Indian students in their districts with state or national norms.

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[2] In some cases, the cost of their time was reimbursed through the study, but often it was not.

[3] The extent of project replacement and attrition is discussed in Chapter 3.

CHAPTER 3: STUDY METHODS

Major Features

1. Overall Purpose

The overall purpose of this evaluation was to reach some conclusions about the effectiveness of the Part A Entitlement Program. Thus, the broad study issue was defined as follows:

To what degree does the Indian Education Act Part A Entitlement Program contribute positively to meeting the special educational and culturally related academic needs of American Indian/Alaska Native children and youth?

2. Objectives

Three basic objectives were drawn from this broad study issue:

- To describe accurately and sensitively the range of Part A project objectives, target groups, cultural activities, and program funding patterns;
- To determine the nature and extent of Part A Program impacts on Indian/Native students, their parents, and local school districts; and
- To determine what, if any, changes in legislation or regulations will provide a more systematic and effective approach to meeting the educational needs of American Indian/Alaska Native children.

3. Study Questions

To address these objectives, a series of major study questions was developed, and is shown in Table 3-1. These questions guided the identification of information sources and types of data required and aided in the selection of analytical tools.

TABLE 3-1

MAJOR STUDY QUESTIONS GUIDING THE EVALUATION

1. What are the organizational, fiscal, and human resources available to Part A projects, and how do projects utilize these resources?

2. To what extent do the objectives of projects funded under the Part A Entitlement Program address the special educational and/or culturally related academic needs of American Indian/Alaska Native children?

3. How have Part A project activities been implemented?

4. What are the impacts of Part A projects on American Indian/Alaska Native students?

5. What impacts do Part A projects have on the parents of American Indian/Alaska Native children and on the American Indian/Alaska Native community that projects serve?

6. What impacts do Part A projects have upon their LEAs?

7. How do federal-level activities, especially those of the Office of Indian Education, affect Part A projects?

8. What is the total amount of federal education funds expended by local school districts on Indian students in grades K-12, and how many of these students are receiving various types of special services?

Several of the study questions (1, 2, 3, and 8) were primarily descriptive in nature and thus addressed the first objective. Other questions (4, 5, and 6) focused primarily on the impact of Part A. The third objective was also addressed through question 7, which analyzed Indian Education Program's policies and activities for strengths and weaknesses. A set of related study questions was also developed; it is contained in Appendix 1.

4. Research Approaches

Two basic research approaches were used during the evaluation of the Part A Program. They are the quantitative and the qualitative/naturalistic approaches. The quantitative approach involved collecting data on a representative sample of projects, using structured data collection instruments developed during the design phase of the study. Qualitative inquiry was conducted at the same time in order to examine a number of specific issues/topics in a subsample. The purpose of blending the two approaches was to achieve a broader and more balanced information and data base and to provide a fuller, more complete picture of the Part A projects from which to derive results and conclusions. What follows is a summary of the two approaches.

With respect to evaluation, the quantitative approach was designed to raise and analyze certain kinds of questions and issues regarding a set of previously identified potential areas of impact. This approach relied on a structured set of procedures in an evaluation design whose elements are delineated prior to actual visits to the projects. (Hypotheses tested are derived a priori.) The procedure made use of structured forms and schedules, such as questionnaires and interviews addressed to particular individuals, groups, and data sources. The objective of such an approach was to systematize and categorize the data collected into a structured form for ease of analysis, using standardized descriptive and inferential statistical procedures. The procedure essentially sought to discover variables and describe their inter-relationships, primarily for purposes of prediction and control. Being reductionist, the process attempted to converge on the truth.

Quantitative data were collected in the form of structured interviews and self-administered questionnaires and from records and profiles. (Refer to Table 4-1 for a listing of the structured data collection forms and number of respondents to each.)

The qualitative inquiry, on the other hand, represented an unstructured approach utilizing case studies as well as ethnographic, naturalistic concepts, as a way of adding more breadth and depth to the overall evaluation in a fashion that the structured quantitative approach is not intended to do. (The topics on which the qualitative inquiry focused are presented in Table 3-2.)

TABLE 3-2

TOPICS INCLUDED IN THE QUALITATIVE PHASE OF THE EVALUATION STUDY

1. Effect of project activities on students going to college or other academic programs after high school (using anecdotes, special cases, rare events);
2. Effects of changes in staff at the National Office of Indian Education on local project operations;
3. Need for (additional) technical assistance by projects in curriculum design and developing other program materials;
4. Impact of Part A projects upon the academic achievement of the Indian students, presently or in the past; and
5. Impact of local Part A projects upon the attendance of Indian students in the school district, presently or in the past.

This approach was also designed to raise and then analyze certain questions and issues regarding the impacts and results of the Part A Program. The approach was essentially open-textured and evolves as the evaluation progresses; thus, it was open to identifying and exploring any range of impacts or results if they are present. Since it was not limited or constrained by strict design considerations, questions were formulated and answers were sought that are specific to the immediate situation. Since this method could be described as focusing upon multiple realities, it was expansionist, and phenomena did not converge upon a single truth, but diverged into multiple truths.

A great wealth and depth of information could be gathered in this qualitative fashion, and the approach has the flexibility to examine all possible impacts as they were identified as well as to fill in information gaps left by the quantitative study. The richness of the information gathered was also a strong point in this process, provided the information is blended with the information gathered from the quantitative approach.

At each site, qualitative data relating to the research question(s) selected for that site were gathered, analyzed, and written up by the field staff at that site. A single study staff member acted as editor/analyst for each of the topical studies from all sites, being responsible for going over each study and checking weak points with authors, and performing internal synthesis of the qualitative studies with results from quantitative survey data analysis.

Special Design Issues

1. Design Constraints

Three major factors influenced the design. First, certain of the legislatively-defined program outputs are not easily measured. There are no generally accepted definitions of the legislative goal of meeting the special educational and culturally related needs of Indian students, nor are there accepted definitions or measures of attainment of this goal. Second, each of the school districts has broad discretion in the interpretation of the Act and the use of federal funds. This variability required extensive onsite data collection and the tailoring of the overall design to local contexts and objectives. Third, the nature of the projects and the school-community systems in which they operate made attribution of impact findings to the Part A Program difficult.

Almost all eligible LEAs and most Indian students within these LEAs were involved to some extent in the Program, thus virtually eliminating the possibility of "true experimental control groups" of any kind. This situation, combined with the supplemental nature and relatively small size of the projects, and the fact that most projects have been in operation for more than five years, compounded the problems associated with identifying student and institutional changes attributable to project activities.

As a result, extensive discussions about program expectations and operations were undertaken with relevant congressional staff, policy and operational staff in the Department of Education, national Indian organizations, and staff of local school districts participating in the Part A Program. Resolution of problematic areas was approached in the following manner.

2. Approaches Adopted

To accommodate the diversity of settings, activities, and objectives, a core set of activities and impacts was investigated at all sites, with other activities and impacts explored only at sites where they were emphasized. Data collection forms and procedures included the identification of relevant project components and activities and use of certain instruments or sets of questions in sites where they applied. On another plane, various analyses dealt with this diversity by using data from sites where certain objectives or activities were absent, as comparison sites for those where they were present. In addition, by scheduling data collection visits in both the fall (1981) and the spring (1982), it was possible not only to measure such impacts within a school year, but also to utilize data gathered in the fall to refine on a site-by-site basis spring data collection plans and procedures. Analyses of data collected in the fall permitted more precision in identifying levels and types of student project participation, and in developing procedures for gathering limited qualitative data at each site. This aided in data interpretation and in preparing focused site descriptions illuminating issues of special policy importance [e.g., effectiveness of very small grants, integration of services with Johnson O'Malley (JOM), Chapter 1, etc.].

To contend with the issue of attribution, the study team and Indian education consultants built into the evaluation design a number of features that substantially heightened the likelihood of detecting impact.[1] First, the design recognized that different types of impacts justified the use of different assessment approaches and techniques. Thus, a breadth of data from a variety of sources and perspectives was collected. By doing so, findings could be "triangulated" as a basis for conclusions regarding project impacts and effectiveness. Such analyses were strengthened by considering the local expectations and needs assessments of projects, regarding what impacts they set out to accomplish.

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[1] See Appendix 2 for the names and professional affiliations of the study's Technical Advisory Panel and other consultants who have furnished aid. In particular, the following have been extremely helpful in this effort: Mike Charleston, formerly of the Native American Research Institute, Morris Rosenberg of the University of Maryland, Grayson Noley of Pennsylvania State University, Joseph Trimble of Western Washington State University, and William Theimer of the University of the Pacific.

Other related evaluation design features dealt with the issue of detecting changes in levels of impact measures over some period of prior project operation. The design therefore used a longitudinal data collection approach, where feasible, to examine the extent of improvement or positive trend of project performance. In such instances, a particular project acted as its own baseline and basis for comparison. This feature was applied to a number of project impact measures, and, as warranted, to student data such as attendance rates. In these instances, sufficient prior years were used so that an impact trend line was present. For certain impact measures, the trend line comparison represented the time period of district operations prior to Part A funding, so that the time period became the comparison baseline for subsequent Part A funded years. The concept of having an earlier period as a baseline for later ones also extended to detecting improvements in student attitudes toward school, group identification, and self-concept. To measure those impacts, both the start and end of the school year were used. A series of cross-sectional and longitudinal comparisons by grade level, type, and extent of program participation (among other factors) was used in attempting to directly attribute impact levels and changes to Part A.

Other impacts dealing with the current level of effectiveness were analyzed in the light of what Part A project characteristics and activities were associated with these findings. This form of comparison (also termed "differential impacts") uses projects having certain features or students exposed to certain treatments as a baseline for projects or students with other characteristics. It was used an as approach because knowing the relative effectiveness of project efforts and settings is likely to be important to policy planners and Indian educators. Still other analyses, albeit a limited number, were conducted by using data from eligible yet unfunded districts (the Alternative Resources Study) to determine the patterns of funding and services they provide for Indian/Native students. Such comparisons helped to illuminate that which Part A uniquely contributes.

3. Areas of Project Impacts

From these discussions it became clear that the Program was expected to have impacts in three areas:

(a) Student Impacts. The ultimate purpose of the legislation is to ensure that educational needs of Indian/Native students are met. Indicators that this has occurred include improvements in the following areas:

- Performance in basic academic skills;
- School attendance;
- Knowledge of Indian (tribal) heritage, history, and culturally related topics;
- Involvement and interest in school;
- Student self-esteem; and
- Academically-related performance after leaving high school (securing a high school equivalency degree, attending college, etc.).

There was also wide agreement that improvements in student attitudes toward school and toward themselves as Indians may be necessary to achieve these objectives, and thus are valid and important objectives in themselves. This aspect is particularly important in urban areas where relocated Indians/Natives and their children often are disconnected from their cultures and tribes. Given the size and scope of most local projects, however, there was also agreement that it would be inappropriate to expect impacts in all areas in most projects or to administer standardized achievement tests in project sites. (See in Chapter 4 the section "Data Analytic Techniques Used.") Thus, the study was designed to accommodate individual project settings and objectives, and to utilize measures sensitive to highly varied local interventions.

(b) Parent Impacts. Congressional testimony leading to enactment of the Part A Program highlighted the overwhelming evidence of the alienation of Indian parents from the public schools and a widespread lack of parental support for their students' school performance. For this reason, the legislation and subsequent regulations have stressed parental involvement in the planning and implementation of local projects. Indeed, the congressional mandate for parental involvement is more explicit and far reaching here than in any other educational legislation. The Program has also encouraged Indian/Native parents to be more active in their children's schools and educational activities. Thus, in discussion with individuals at the national and local levels, there was complete consensus on the importance of assessing the impact of the Part A Program on parents and their involvement with the project and the schools. Parental impact areas of particular importance are:

- Involvement in school advisory and decision-making bodies (PTAs, project committees, school boards, etc.);
- General attitude and support for local schools;
- New, non-school-related involvement in community affairs; and
- Personal gains in knowledge, education level, or employment as an outgrowth of project involvement.

(c) School District Impacts. Legislative testimony and rationale for the Part A Program also included strong evidence of the insensitivity of most local school districts to the special educational and culturally related needs of Indian/Native students. Indeed, this need was widely cited as the basic rationale for the Program and its special student and parent related activities and objectives. Thus, although few local projects include impacts on their school districts among the explicit project objectives, from a national perspective this is a critically important area of investigation which speaks directly to program continuation and direction. From the review of relevant literature and discussions at the national and local levels, the school district impacts considered of particular importance are:

- Use of curriculum and classroom materials that recognize the positive contributions of Indians/Natives to American life;
- Employment of Indian professional personnel;
- Sensitivity of instructional and building-level school staff to Indian customs and values as they affect students in school;
- General school climate toward Indian students and parents as perceived by the Indian community; and
- Modification of any pre-existing school policies judged onerous by the Indian community.

(d) Community Impacts. In addition to these impacts, the Program may well have had other important, although unintended, consequences. These are particularly likely with respect to the relationship between the Indian community at large and the public school systems. Consequently, the study design and instruments incorporated some questions that explicitly addressed this potential impact area.

4. Achievement Assessment

In developing the evaluation study design, considerable attention was given to the appropriate use of standardized achievement test scores. It was initially presumed that these would be a centerpiece of the data collection and assessment effort. However, after a thorough literature review, consultations with leading national experts on student achievement testing and evaluation design,[2] a close look at Part A project applications, and exploratory visits to several representative local projects, the initial expectations changed. Essentially, it was concluded that the academic "treatments" provided by most projects were not amenable to assessment with standardized tests of basic academic skills. Treatments were frequently either too specific (e.g., tutoring in a particular subtopic of a particular class) or too diffuse (e.g., including some language arts instruction as part of an Indian student club's activities) to be captured by broadly-focused standardized tests. Also, most often, they were focused on social studies, science, or other academic subjects not addressed by such tests. These program factors plus: (a) a concern about the variety of unknown biases in standardized tests with respect to Indian populations;[3] (b) reservations regarding the statistical reliability of test score data taken from relatively small numbers of students in any given project, grade level, and school; and (c) a concern for cost-effectiveness and respondent burden created by extensive student testing led to rejecting the use of achievement test score data as a primary aspect of the impact evaluation design.

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[2] Among others: Gene Glass of the University of Colorado, Ronald Berk of Johns Hopkins, Rodney Skager of UCLA, William Coffman of the University of Iowa, and Donald Ross Green of the California Testing Bureau.

Instead, it was decided to collect from all projects existing reading and math test data for the spring preceding the site visit (i.e., spring 1981)[4]. Test score data were collected from school files, converted to a common metric, and then cross-sectionally compared across grade levels and other student- and project-level factors (controlling for differences in participant nonparticipant student characteristics). In those projects with students in tutoring components, pre- and post-ratings on several academic and other school-related performance dimensions were obtained. For those students, plus those not receiving any particular academic treatment, the assessment of academic achievement was based on composite item ratings of teachers, parents, students, and staff. Using these approaches provided a more valid, locally-relevant, and cost-effective set of academic achievement information for impact evaluation purposes than extensive direct testing of students could possibly provide.

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[3] To date, no systematic study of item bias has been conducted among Indian students, to the best of the writers' knowledge.

[4] Data for only the previous year were sought because of prior experience in seeking multiyear data from school files. Year-to-year changes in district testing policies, alternate grade testing, and the general condition of many school files made it infeasible to seek retrospectively multiyear data in a national sample of LEAs.

5. Attitude Assessment

Particular attention during the design process was also given to the problems of assessing Indian student attitudes and self-esteem. Nationally-recognized experts in this field contributed extensively both to the basic evaluation design decisions and to the development of study instruments.[5] After extended deliberation and the involvement of Indian educators across the country, it was concluded that data should be collected from students about their attitudes toward themselves, their attitudes toward school, and their identification as Indians or Alaska Natives. These are important areas to assess because over 75% of the projects included such changes among their program objectives. The objectives of projects and the nature of the activities in some projects also made it appropriate to assess whether student attitudes in these areas had improved during the school year as a result of project exposure.

In many projects, a range of culturally related and counseling activities are used to improve attitudes about school, remaining in school, and students' feelings about themselves, and to measure their knowledge of Indian-related topics. Often, project activities directed toward these outcomes are quite intensive, though elsewhere the activities are quite diffuse or indirect.[6]

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[5] Particularly, Professors Morris Rosenberg of the University of Maryland and Joseph Trimble of Western Washington University.

[6] Examples of such activities include: providing classes, field trips, or group presentations in the area of Indian culture and history; providing role models through special teachers, tutors, or other Indian staff; and providing intensive counseling in academic and vocational areas.

In some projects, the effects of previous years' project efforts may have been great enough to minimize the chances of successfully measuring project effects within the single year of this study. Thus, the stated objectives and the nature of the activities in many projects made it quite proper to assess whether student attitudes in these areas had improved during the school year as a result of project exposure. Consequently, the plans called for students to complete a series of attitude scales on relevant demensions of interest (along with other questions dealing with project participation) during the fall and spring site visits.

Specifically, data were collected from over 12,000 American Indian and Alaska Native students in the fourth through twelfth grades in the fall or spring of the 1981-82 school year. As such, it represents the largest study of Indian student attitudes to date, being much more comprehensive than the National Study of American Indian Education, which was based on 2,422 students and other data sources (Havighurst, 1970). Table 3-3 indicates the number of students who supplied attitudinal information in the fall and spring.

TABLE 3-3

NUMBERS OF STUDENTS SUPPLYING ATTITUDINAL INFORMATION BY TYPE AND GRADE RANGE

Type of Information	Number of Students by Grade Range 4-6	7-12	Totals
Student questionnaires - fall	5,328	8,149	13,477
Student questionnaires - spring	5,173	7,366	12,539
Both fall and spring	4,255	5,665	9,920

The development of the attitude scales began with the preparation of a literature review on the instrument selection, measurement, and conceptual issues involved in assessing Indian students' self-concept (Goldsamt and Hipps, 1980). All dimensions and items were chosen with care in view of cultural and measurement factors which could affect their validity.

For example, items concerning the academic self-concept domain used in the study came from Abdel-Mawgood and Hatch (1972) and reflected the work of Brookover. Measures of global self-esteem came from the widely used work of Morris Rosenberg (Rosenberg and Simmons, 1972; Rosenberg, 1965). Other attitude-toward-school and self-concept items came from a highly modified version of the Coopersmith Self-Esteem Inventory, adapted from the Pennsylvania Department of Education's educational quality assessment battery (1980; Kohr, 1982) and the self-perception scales prepared by Trimble (Trimble, 1977; 1983). Core study staff, together with a resource team, also prepared items to tap specific topics such as cultural identification and pride.

In addition to identifying items that measured specific dimensions or topic areas, the research team was also concerned with the cultural relevance of the items and age-grade levels of the respondents. Thus, after the items were identified, they were extensively reviewed for ambiguity, acquiescence, social desirability, response format, appropriateness of age level, and cultural relevance. Although the study team recognized the broad cultural differences existing among Indians and attempted to design scales which would minimize cultural bias as much as possible, sources of error imposed by semantics and cultural differences may still have been present.

During this development process, the items were reviewed by over 20 Indian educators, representing many tribes in various parts of the U.S., and including professors, local project directors, and teachers. Also solicited and used throughout the development of the instrument and student data collection procedures were the comments and suggestions of the members of the study's Technical Advisory Panel. After refining, rewording, and eliminating dimensions and items, the scales were pretested on a small sample of elementary and secondary school Indian/Native students. Item analyses were performed to determine the response alternative and distributional characteristics of items, scale internal consistency reliabilities, correlations among items and scales, and the factorial structure of dimensions and items.

The final dimensions which were retained are presented in Table 3-4. For each dimension, composite scores were formed by adding individual item responses and dividing by the number of valid responses; the same items were used in both the fall and spring versions.

Two student questionnaires were developed with these dimensions. The grades 4-6 form is a scaled-down and adapted-when-necessary version of the grades 7-12 form. It measures the same subdimensions and contains many of the same items, to permit cross-sectional trend comparisons of patterns of shift in these dimensions across upper elementary (4-6), middle (7-9) and high school (10-12) grade ranges. The number of items in each of the nine scales, and what dimension each scale measures are presented in Table 3-4.

TABLE 3-4

NUMBER OF ITEMS USED TO MEASURE ATTITUDINAL DIMENSIONS INCLUDED IN THE STUDENT QUESTIONNAIRE FALL AND SPRING VERSIONS (GRADES 4-6 AND 7-12)

Dimension Measured (no order intended)	Number of Items In The Grades 4-6 Form	Number of Items In The Grades 7-12 Form
1. Attitude toward school	9	9
2. Value of education	3	7
3. Academic self-concept	4	5
4. Global self-esteem	6	8
5. Self-derogation	2	2
6. Self-esteem	4	6
7. School fairness	---	2
8. Indian/Alaska Native identification with ethnic heritage*	7	10
9. Cultural pride/preference for instructional settings**	5	8
TOTALS: 9 Dimensions	40 items	57 items

*A shorter version of this composite index appeared in fall Student Questionnaires.

**Not included in fall Student Questionnaires.

To confirm the quality of the items and how well they measured the desired dimensions, the internal consistency reliabilities and factorial structure of each dimension were separately examined for the fall and spring data bases. By doing so, four items in each student questionnaire (grades 4-6 and 7-12) were excluded from further use, since they had inadequate psychometric properties. They either did not vary sufficiently or highly correlated with stronger indicators of particular dimensions.

In order to test further the scales which were developed, correlational and factor analyses were also carried out. The results of these analyses, together with basic statistics that describe the characteristics of the scales, are presented below.

(a) Factor Analytic Results. Item factor analyses were performed for both the fall and spring data sets for both grade ranges. Items from the spring versions of the elementary and secondary questionnaires were included in a factor analysis designed to produce a factor matrix with maximum generalizability. Principal components factoring followed by an orthogonal (varimax) rotation produced the final factor matrix. Only the results from the spring data set are reported here, because they are comparable to those found for the fall data and they include cultural identification items not included in the fall version of the questionnaire.

The elementary grade range questionnaire items produced six distinct factors that are described below:

- Attitude toward school: consisted of variables depicting some positive orientation to school, school activities, and teacher caring.
- Academic self-concept: included orientations of school-related performances and self-appraisal.
- Value of education: consisted of items that speak generally to the importance of education and learning.
- Self-esteem: consisted of personal assessments where respondents expressed opinions about themselves in reference to others.

- Self-derogation: consisted of variables having to do with some negative self-attribution.
- Cultural pride: consisted of items tapping some aspect of the Indian culture and pride about one's tribe.

The items that loaded on the six factors were quite consistent with the dimensions identified and established during the development of the questionnaire. In this vein, then, the factor analytic results verified and confirmed the decisions made concerning what items and scales to retain, and thereby established confidence in the scale reliabilities.

The spring version of the questionnaire contained a separate set of culturally related items. Initially, it was thought that these items would provide information concerning their perceived importance to respondents participating in local programs. However, a more detailed inspection led to the conclusion that they might form separate dimensions of their own and might also be correlated with other related items not originally included in the scale.

These items, together with other items measuring cultural pride, were analyzed by factor analytic methods. Three factor patterns were produced. Seven formed the dominant first factor and clustered around a theme dealing with identification and ethnic heritage. Five items loaded on an instructional dimension. Two other items formed a relatively weak third factor that emphasized a type of ethnic integration-segregation domain. The third was dropped from further consideration due to its measurement weakness, but the other two were added to the original six so that the elementary age group items tapped a total of eight fundamental dimensions.

A factor analysis of the secondary grade range items yielded seven factors:

- Attitude toward school: contained items that appear to emphasize teacher behaviors, school activities, and a positive orientation toward school. The structure of this factor closely resembles the first factor in the elementary group data set.

- Cultural pride: consisted of items that emphasize pride in tribal affiliation, learning about Indians and one's tribe, and the importance with which one's tribe is held.

- Self-esteem: contained items indicating an orientation toward doing things well, self-satisfaction and positive attitudes toward themselves. It resembles the fourth factor of the elementary group factor analysis.

- Value of education: contained items that emphasize interest in classes and learning, doing well, staying in school, and the difference school makes in one's life. The factor resembles the four-item factor with the same theme in the elementary group data set.

- Academic self-concept: composed of items tapping some aspect of one's performance in school.

- School fairness: appeared to tap a school-rules and school-climate dimension.

- Self-derogation: composed of wanting more respect and feelings of uselessness. In content, it resembles the fifth factor in the elementary group data set.

Consistent with the conclusions drawn for the elementary group factor dimensions, the secondary group items also appeared to follow the patterns identified and developed during the questionnaire development phase of the project. The factorial structures of the items lent credibility to the domain identified for assessment, and, therefore, substantiate the internal consistency and homogeneity of the items used as scales.

Based on the results yielded by the factor analyses, it was decided to form separate scales and use them in subsequent analyses. The nature of each scale for each age group appeared to meet minimal criteria for scale construction. The factor loading for each item and scale exceeded .30, and the intercorrelations between scales were low enough to suggest a minimum of overlap between constructs measured by these scales. (See Tables 3-5 and 3-6 for these intercorrelations.)

An analysis of other cultural identification items was also performed on the grade 7-12 group data set. The analysis yielded three distinct factors, the third quite weak, and closely resembled those factors produced from comparable items in the elementary group. The two factors which were retained are:

- Identification with ethnic heritage: items load highest on this factor reflecting history of tribe and culture, learning about language and Indians, going to school with other Indians, and pride in tribal affiliation.
- Instruction: items loading highest on this factor deal with school activities in which Indians participate, including the kind of classroom and teachers used for instruction.

As indicated above, merging the two types (self and cultural) of factor analyses yielded nine distinct factors appearing in fall and spring grades 7-12 instruments. The strength of the loadings on each of the factors led investigators to form separate scales based exclusively on the distinct patterns.

(b) Composite Scale Results. Items on each scale were then subjected to conventional analyses. Tables 3-5 and 3-6 present the intercorrelations of the attitude scales for the fall elementary and secondary group data sets, respectively. The fall time period was used to obtain "purer" (or less potentially affected by program participation) estimates of the intercorrelation between dimensions or composite scale scores. While the correlations between certain scales were moderately positive, most of the scales appear to be somewhat distinctive. That is, the intercorrelations were sufficiently low at each grade range. Somewhat different types of dimensions seemed to exist and did not warrant, for example, pooling two or more scale scores to form some "composite" dimension.

Table 3-7 presents the intercorrelations of the fall composite with the corresponding spring score for those students who were administered both instruments. Standardized item alpha internal consistency reliabilities are also contained in Table 3-7 for the same dimensions, so that two types of reliability estimates can be made for each scale. That is, the fall-spring intercorrelations present an approximation of a stability or test-retest reliability coefficient. However, since the fall and spring data were gathered a number of months apart and at opposite ends of the school year, the intercorrelations are likely to be affected by any effects of Part A activities which may have, for example, shifted student self-concepts and attitudes toward school. This shift is desirable, since it indicates program participation effects and impacts.

TABLE 3-5

INTERCORRELATIONS[a] OF FALL ATTITUDE SCALES: GRADES 4-6 (N=4886)[b]

Dimension	1	2	3	4	5	6	7
1. Attitude toward school	(1.00)						
2. Value of education	.38	(1.00)					
3. Academic self-concept	.45	.24	(1.00)				
4. Global self-esteem[c]	.29	.20	.40	(1.00)			
5. Self-derogation[c]	.09	.05	.18	.59	(1.00)		
6. Self-esteem[c]	.31	.22	.39	.91	.20	(1.00)	
7. Cultural pride[d]	.13	.06	.09	.11	.01	.13	(1.00)

[a] Correlations greater than .02 are statistically significant at $p < .01$ with an N of 5000.

[b] Intercorrelations are based on students who had scores on all dimensions, so that relationships could be more readily compared.

[c] Correlations between global self-esteem, and self-derogation and self-esteem scales are high, because self-derogation and self-esteem are subscales of the global scale and contain the same items. The direction of negatively worded items, such as self-derogation items, has been reversed for scaling purposes; hence the positive correlation of polar concepts.

[d] Represents the initially conceptualized dimension and corresponding items.

Note: The value of (1.00) along the diagonal represents a correlation of a scale score with itself.

TABLE 3-6

INTERCORRELATIONS[a] OF FALL ATTITUDE SCALES: GRADES 7-12 (N=7547)

Dimension	1	2	3	4	5	6	7	8
1. Attitude toward school	(1.00)							
2. Value of education	.58	(1.00)						
3. Academic self-concept	.28	.38	(1.00)					
4. School fairness	.29	.33	.17	(1.00)				
5. Global self-esteem[b]	.24	.29	.47	.19	(1.00)			
6. Self-derogation[b]	-.07	-.03	.04	.10	.49	(1.00)		
7. Self-esteem[b]	.31	.35	.52	.17	.90	.08	(1.00)	
8. Cultural pride[c]	.08	.15	.07	-.07	.07	-.16	.16	(1.00)

[a] Correlations greater than .03 are significant at p. < .01 with an N of 7000. Intercorrelations are based on students who had scores on all dimensions, so that relationships could be more readily compared.

[b] Correlations between global self-esteem, and self-derogation and self-esteem scales are high, because self-derogation and self-esteem are subscales of the global scale and contain the same items. The direction of negatively worded items, such as self-derogation items, has been reversed for scaling purposes; hence the positive correlation of polar concepts.

[c] Represents the initially conceptualized dimension and corresponding items.

Note: The value of (1.00) along the diagonal represents a correlation of a scale score with itself.

TABLE 3-7

FALL-SPRING ATTITUDE SCALE RELIABILITIES AND INTERCORRELATIONS BY GRADE RANGE

	GRADES 4-6				GRADES 7-12			
Scale	N	Standard Alpha Reliab.[c]	Estimated Test-Retest Reliab.[d]	Fall-Spring (N=2981)	N	Standard Alpha Reliab.[c]	Estimated Test-Retest Reliab.[d]	Fall-Spring (N=4014)[a]
Attitude toward school	5,039	.72	.63	.48	7,853	.79	.70	.59
Value of education	5,235	.46	.37	.28	8,050	.76	.67	.60
Academic self-concept	5,172	.62	.53	.47	8,034	.73	.64	.67
School fairness	--	*	*	*	7,988	.64	.55	.42
Global self-esteem	5,218	.51	.42	.40	8,005	.68	.59	.54
Self-derogation	5,199	.51	.42	.29	7,937	.39	.30	.37
Self-esteem	5,161	.47	.38	.40	8,018	.76	.67	.53
Identification with ethnic heritage[b]	5,159	.75	.66	*	7,316	.83	.74	*
Cultural pride/instructional setting preferences[b]	5,140	.56	.47	*	7,271	.85	.76	*

[a] Intercorrelations are based on students having scores on all dimensions, so that relationships could be more readily compared. All intercorrelations in this table are statistically significant at $p < .01$.

[b] Represents the cultural dimensions developed from factor analyses and corresponding items.

[c] Standardized item alpha internal consistency reliabilities are reported for fall data for school and self-related scales, and for spring data for cultural identification/pride scales, which in their two-factor form, were not administered in the fall.

[d] Based on subtracting a correction factor of .09 from the alpha reliability, as recommended by Murray (1983).

*No items on this dimension administered to this grade or during that time of the school year.

In general, considering: (1) the earlier findings that items intended to tap a particular dimension actually did so (judging from the factor analysis results) and (2) the underlying issues which affect measurement of Indian student's perceptions of themselves and their school experiences, the level of internal consistency and stability found across these attitudinal scales is fairly respectable. However, they are lower than fully desirable (i.e., if they had alpha levels of .80 or above) and, therefore, the results must be treated with caution. Elementary grade level reliabilities, particularly, tend to fall in this latter category.

The reliabilities at the grade 7-12 level are higher than for the grade 4-6 instrument, also reflecting the greater number of items used to measure virtually every dimension. However, given the fact that other studies have obtained higher reliabilities than the present one, findings based on some of the scales should be interpreted with caution, as was done here. Hence, greater emphasis has been placed on the relative levels of attitudinal scores, than on whether or not they tended to reliably shift over the time span of a single school year.

In addition, attitudinal results have been presented at several levels. The percentages of Indian students who completed the items comprising each dimension are given for the elementary and secondary grade ranges for the fall and spring time periods. These analyses are presented for each time period separately (i.e., as cross-sectional comparisons) so that overall student attitudes at two district points in the school year can be examined. This information was also important at a descriptive level in order to assess the context in which projects operate, interpret other student-level data, and assess the appropriateness of citing a change in these dimensions among the projects' major objectives. Group mean attitude scale scores were also presented, both overall and in terms of meaningful differences found when using particular program variables as cross-break factors. Finally, the relationship of attitudes to academic performance was presented.

6. Additional Considerations

Finally, several cornerstones of the overall design are relevant to mention. All instruments represent the result of extensive review, for content validity and sound measurement properties, by a large number of Indian educators and recognized evaluation authorities. (See Appendix 2 for their names and professional affiliations.) In addition, the sampling design was constructed to provide statistically representative samples of projects, parents and students, and tribal leaders or community representatives. Also, relatively more of the larger Part A projects were chosen to increase the likelihood of detecting impact, since more resources were presumably available in such settings.

Furthermore, the impact analytic approaches deliberately incorporated various contextual, project, and student characteristics, so that such variables as project size and location were directly considered as alternative or competing explanations for impact levels and shifts in those impacts. The analyses also proceeded in a series of stages or modules which went from purely descriptive to intermediate and advanced impact analyses, and to multivariate analyses as warranted. This modular approach extended to jointly analyzing impact indicators that addressed dimensions related to each other. In this way, obtained findings and inferences were made more clear-cut. The interpretation of the findings was enhanced by using external sources of data for baseline purposes. In addition, using relevant data from past or ongoing national and local evaluations and studies helped to place the study findings in context and substantiate their validity.

In summary, the special design issues which emerged in evaluating the Part A Entitlement Program were problematic. However, they have been resolved by using a variety and breadth of design approaches and appropriate statistical and interpretative techniques. Such a combination has produced a descriptive yet indepth profile of what Part A projects have accomplished thus far and what remains to be done to help Indian students.

Sampling Plan

1. Study Population and Sample Sizes

Because the Part A evaluation study has several purposes, a fairly complex sampling design was used to select projects, school districts, and respondents. The design was intended to fit the study scope (shown in Table 2-1 in Chapter 2), particularly the information-gathering needs of the Local Projects Impact Study and the Alternative Resource analysis facets of the overall study design.

The study included all public school districts that were eligible to receive Part A Indian Education Act (P.L. 92-318)[7] funds. In 1980, the Department of Education estimated 3,177 school districts, other than tribally-controlled schools, were eligible to receive such funds. (Tribally-controlled schools,[8] which are eligible to receive Part A funds, were outside the scope of this study.)

Two populations were surveyed:

- For the sample of school districts from which data on Alternative Resources were collected, the survey population included all 3,177 school districts eligible for Part A funding.
- The survey population for the local project impact evaluation was a 865-project subset of the 3,177 school districts [all of which were funded for at least 3 years (1979-81) and included more than 30 Indian/Native students in 1980].

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[7] Eligible districts are those in which ten or more American Indian or Alaska Native students are enrolled, except in the states of Alaska, California, and Oklahoma, in which all districts enrolling one or more Indians/Natives are eligible.

[8] There are only 45 tribally-controlled schools participating in the program. In many respects they are quite different from public LEAs, and it would be inappropriate to study them in the same fashion. They may be the subject of a separate study at another time.

In nearly all cases there was a one-to-one correspondence between a "project" and a "school district." In a few cases, a project was comprised of two school districts that jointly operated the project. The impact evaluation study pertained to a survey population of 865 projects. The 865 projects were a subset of the 1,052 projects funded in 1981 that were also funded for at least three consecutive years (1979, 1980, and 1981) and which reported more than 30 Indian students in 1980. A sample of 119 projects was originally selected from the 865 projects for the impact study. (See the next section, "Sampling Design.")

Of this original sample of 119 projects, 19 declined to participate in the study at the outset. With one exception (a project in Maryland), each of these projects was replaced by another randomly selected project from the same sampling stratum. Reasons for non-participation included: recent death of a project director, recent turnover of key project staff, a crisis of some sort in the district unrelated to Part A but precluding cooperation of district staff, and district policies discouraging participation in federal studies of any kind. Thus, 118 projects were visited in the fall of 1981 and, of these, 114 cooperated fully with the study throughout. Two projects withdrew from the study between the fall and spring visits. The other two projects refused access to a random sample of their students and various data about them. Three of these projects (Bering Straits, Alaska; Denver, Colorado; and San Diego, California) were not revisited in the spring and were excluded from all analyses. Some data from the other project (El Reno, Oklahoma) were gathered in the spring, and this project was included in analyses wherever possible. The final sample size, therefore, was 115. Analysis of the characteristics of the non-participating projects indicated that no bias threatening the generality of the findings is likely to have occurred, either from the initial refusals to participate or subsequent attrition.

By including only projects with three or more years of Part A program operations, "start-up" implementation problems, which confound and reduce the likelihood of program effects, were avoided. Also, longitudinal data related to student effectiveness and other factors were more apt to be present. Similarly, including only projects with more than 30 students assured a data base that was sufficient for assessing student effects and a local project administrative structure sufficient to respond to study information needs. In 1980, projects with more than 30 students and three or more years of program operations experience represented over 91% of all funded LEAs. Thus, only a small proportion of LEAs was screened out, and the proportion of Indian students in projects screened out was also not of major concern.

The sample for the Alternative Resources Study represented a combination of two samples: (1) the impact evaluation sample of 119 projects representing the subset of 865 projects, and (2) a sample of 108 LEAs selected to represent the population of 3,177 LEAs that were eligible to receive Part A funds, but were not included in the subset of 865 projects. These two samples, properly combined and weighted, constituted a single sample representing the 3,177 eligible LEAs. This sample was used to prepare a resource analysis based on estimates of three types of information:

- Total federal education funds expended by local school districts on Indian students;
- The number of Indian students served by these funds; and
- The types of special services the students receive.

2. Sampling Design for Selection of Projects for the Local Projects Impact Evaluation

For the Local Projects Impact Study, 119 projects were selected, but due to attrition, sufficient data for analyses were obtained from 115 of those projects. Within the sample projects, data were collected from an appropriate district administrator, the project staff, members of parent committees, parents of students, student records on file, and students. Multistage sampling, particularly the sampling of students from whom to obtain information, was involved for much of the evaluation data. However, the primary sampling units were projects.

Very briefly, the sample of local projects may be described as a stratified random sample with probabilities of selection that were proportional to an appropriate measure of project size. One project was selected from each of 119 strata, yielding a sample of 119 projects.

One of the first sample design decisions to be made involved a choice of probabilities for selecting projects. With regard to sampling error, some data to be collected called for selecting projects with equal probabilities regardless of size of project. For other data, especially where individual students were the units of analysis, it was preferable to select projects with probabilities proportional to the number of Indian students.

General experience with the statistical efficiency of alternative measures of size as a basis for sample selection, and consideration of various kinds of data to be collected, led to a decision to use the square root of the number of Indian students as the measure of size, and to select projects with probabilities proportional to that measure. Thus, a project with 400 students would have a probability of selection which was twice that of a project with 100 students.

To offset the higher probabilities of selecting large projects, smaller sampling fractions were used for sampling students within large projects. In fact, the procedure was to determine and apply within-project sampling fractions so that all students in the population of 865 projects would have the same chance of being in the sample, regardless of project size.

Stratification of projects. Thirteen very large Part A projects with more than 2,000 Indian students were treated as a special group. Three of the 13 were large enough to justify being included in the sample with a probability equal to one. The remaining ten were stratified into four strata, and one project was selected with a probability proportional to size (i.e., the square root of the number of Indian students) from each of the four strata. This left 852 (i.e., 865 minus 13) LEAs to be sampled. These 852 LEAs were divided into 106 strata, approximately equal in "size," and one LEA with probability proportional to size was selected from each.

One of the design objectives of stratified random sampling is to achieve a high degree of homogeneity within strata. To accomplish the stratification, 12 geocultural regions and three density groups were defined, as follows:

- Density: Projects were first classified by Indian student density, that is, by the ratio of Indian students served by a project to the total number of students in the school district's student body. To a high degree, this variable stratified the population in terms of:

  Urban projects that have diverse tribes and relatively few Indians/Natives compared with the total number of students in the district; and

  Reservation-based projects that have a single tribe and a high number of Indian students compared to all other students.

  This variable was considered important since the nature and level of student density could affect the extent of project impact. For example, Indian/Native students in urban situations may have few opportunities to strengthen their knowledge about their Indian (tribal) heritage, culture, and history. This is a particularly important factor in areas with large numbers of relocated Indians/Natives who are often disconnected from traditional family and tribal supports, especially for their children. Also, urban districts, unlike most reservation-based projects, generally serve more than one tribe, and thus serve students who are culturally diverse. Three density groups based on percentage of Indian students were established, based on consultations with Indian educators: less than 5%, 5.01-70%, and 70.01-100%.

- Geocultural region: This was the other key stratification variable. Projects were stratified by 12 geographic regions as shown in Table 3-8. Projects were listed by density group within each of the 12 geocultural regions. This list included 852 LEAs, as the 13 largest were treated separately as indicated previously. From the listing of projects by density group within regions, the process of stratification continued with the objectives of equalizing strata by size and selecting one project from each stratum.

  To form the 106 strata, in some cases, projects in a particular population regional density group were broken down further. In other cases, some combining of projects (e.g., across regions) was necessary to obtain a sufficient number of projects to form a stratum. For example, suppose the number of projects in the high density group in a region was enough to form 1 3/4 strata. One stratum would be formed within that region and density group, and the second might have been defined by including some nearby projects in another region, or perhaps some projects of highest density within the middle density group in the same region.

  In a few cases, strata were quite small in order to avoid wide cultural differences within a stratum, and to assure that certain tribal groups would be represented when a random selection was made. The regional breakdown not only divided projects into geographically distinct areas, but also into cultural regions as well. Use of geocultural strata ensured that diverse tribal affiliations and parts of the United States, including Alaska, were included in the sample.

TABLE 3-8

GEOCULTURAL REGION CATEGORIES

The five Office of Indian Education Technical Assistance Center Regions were subdivided as follows:

1. Northern Region 1 -- Illinois, Michigan, Indiana, Ohio, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine.

2. Southern Region 1 -- Kentucky, Virginia, West Virginia, Maryland, Delaware, New Jersey, District of Columbia, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, and Florida.

3. Eastern Region 2 -- Wisconsin, Iowa, and Minnesota.

4. Dakotas (Region 2) -- North Dakota and South Dakota.

5. Western Region 2 -- Nebraska, Wyoming, and Montana.

6. Alaska (Region 3)

7. Southern Region 3 -- Washington, Oregon, and Idaho

8. California (Region 4)

9. Southwest Region 4 -- Arizona and New Mexico

10. Northern Region 4 -- Nevada, Utah, and Colorado

11. Oklahoma (Region 5)

12. Region 5 Remainder -- Texas, Louisiana, Arkansas, Missouri, and Kansas.

After making a preliminary selection of the projects, the composition of the sample was reviewed and discussed with the study's Technical Advisory Panel of Indian educators on the basis of the following factors:

- Geocultural region (overall for specific states, and within particular states such as Alaska, California, and Oklahoma);
- Proportions of reservations, rancherias, urban settings, and suburban sites;
- Indian tribal diversity and heterogeneity; and
- Shifts from 1980 to 1981 in the number of students served by each project.

Based on these factors, some strata were redefined and some resampling occurred. However, the number of strata and the sample size were not changed. The final selection of projects adhered to the principles of probability sampling, except that substitutions were later required owing to non-cooperation of some LEAs. When necessary, a substitute was selected which matched the original as closely as possible in size and other characteristics. The composition of the sites which were chosen is presented in Table 3-9.

Mathematically, the probability of any given project's being selected was s/S, where "s" is the square root of the number of Indian students in the project and "S" is the sum of the square roots for all projects in the stratum from which it was selected. When a substitute was selected, "s" became the size of the substitute, not the original selection.

3. Sampling of Respondents Within the Local Projects Impact Evaluation Sample

In general, the following ten respondent groups were involved in the data collection which occurred in the 115 randomly selected impact evaluation projects:

- School district administrators (superintendents or their designees, and assistant superintendents, coordinators of federal programs, or another administrator directly supervising the Part A project director);

TABLE 3-9

SELECTED CHARACTERISTICS OF SAMPLED IMPACT EVALUATION SITES

	N	%
I. Location (N=115)		
1. On or Near a Reservation	44	38.2
2. Other Rural	31	27.0
3. In an Urban setting (10,000-50,000)	16	13.9
4. Metropolitan (50,000 +)	24	20.9
II. Geocultural Region (N=115)		
Northern Region 1	13	11.3
Southern Region 1	6	5.2
Eastern (Region 2)	8	7.0
Dakotas (Region 2)	6	5.2
Western (Region 2)	7	6.1
Alaska (Region 3)	7	6.1
Southern Region 3	11	9.6
California (Region 4)	12	10.4
Southwestern (Region 4)	14	12.2
Northern (Region 4)	3	2.6
Oklahoma (Region 5)	25	21.7
Remainder (Region 5)	3	2.6
III. Percentage of Indian Students in the LEA (N=115)		
.0001 - 5%	40	34.9
5.0001 - 20%	25	21.7
20.0001 - 70.000%	28	24.3
70.0001% & over	22	19.1
IV. Total Number of Indian Students Enrolled (N=115)		
31 - 99	20	17.4
100 - 219	35	30.4
220 - 549	32	27.8
550 - 999	14	12.2
1000 & over	14	12.2
V. Project Components (N=115)*		
1. Have a Tutorial/Academic Component (includes basic skills, gifted and talented, etc.)	91	79.1
2. Have a Counseling Component (includes career/vocational, substance abuse, psychological, etc.)	60	52.2

TABLE 3-9 (Continued)

		N	%
3.	Have a Cultural Component (includes language, culture, history, current affairs, arts and crafts, etc.)	75	65.2
4.	Have a Formal Home-School Coordination Component	51	44.3
5.	Have a Parental/Student Costs Component	28	24.3
VII.	Parent Committee (N=115)		
1.	Number of members		
	Total: 3-9	58	50.1
	10-19	46	40.0
	20-29	5	4.3
	30-65	6	5.2
	Indian: 1-9	69	60.1
	10-19	38	33.0
	20-29	2	1.7
	30-65	6	5.2
	Non-Indian: 0	58	50.4
	1-9	57	49.6

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*Percentages may total more than 100% due to multiple components within projects.

- Part A project directors;
- Teaching and non-teaching project staff (the latter including counselors, resource specialists, and tutors);
- Parent committee chairpersons and three active committee members designated by the project director or chairperson;
- Indian community and tribal leaders (one person not directly associated with the project selected in the following order, depending on availability: (a) chairperson of the tribal education committee or his/her designee, (b) chairperson of an urban Indian center's education committee or his/her designee, (c) person identified by most interviewed parents as the most interested and influential member of the Indian community with respect to educational issues);
- Indian students in grades 4-12 attending schools and in grades where Part A project activities were available;
- Parents of a random sample of sampled Indian students;
- Principals of schools having Part A activities;
- Regular classroom teachers of Indian students but not associated with Part A; and
- Students formerly in high schools in sampled districts (i.e., those having Part A projects).

Each respondent group therefore became a category of personnel or individuals represented by: the school district, Part A project, Indian community, students participating in Part A activities, or parents of such students. While most groups of respondents were contacted during the spring of the school year, a few were contacted during the fall as well.

The procedures used for selecting each of these types of respondents, along with a description of the type of information obtained, are summarized below.

(a) School District Administrators. In each of the 115 randomly selected projects, the corresponding school district superintendent or the coordinator of federal programs (or administrator who directly supervised the Part A Program within the district) was contacted.

While the title of the supervising administrator varied from district to district, in reality, the role of the individual and his/her access to project data were the key factors for selection. Probability sampling was not involved in selecting the type of administrator. Rather, the administrator considered most appropriate for dealing with the topics included in the LEA Administrator Questionnaire was contacted.

Version 1 of this instrument dealt with background characteristics of the district, the district support provided to the project, and an assessment of project impacts on students. Version 2 dealt with issues relating to the various effects of the project during the school year as perceived by the district, as well as the functioning of special programs, such as Part A, within the district environment. Version 1 was administered to the superintendent, the assistant superintendent, or the federal program officer during the fall data collection period. While Version 2 was used during the spring data collection period, every attempt was made to interview the same individual as in the fall.

(b) Project Directors. The directors of the 115 projects selected or their designated representatives, such as a full-time assistant project director when the nominal director was only minimally involved, were contacted during both the fall and spring data collection periods. The fall interview focused on project characteristics, while the spring interview focused on the project's impact during the current school year and since its initial funding. Various types of impact dimensions were included in the Project Director spring form. In addition, those portions of the Overview of Project Scope and Component Description form that were appropriate to a given project and that characterized the project's activities were completed by the director or designated staff during the fall visit. Also during the fall, the field staff completed document review and file search activities, using the Document Review form and the Post High School Follow-up Survey Questionnaire. The latter was designed to record factual information about the academically-related activities of a sample of high school sophomores in the years 1970-71, 1972-73, 1974-75, 1976-77, and 78-79. These data were gathered from school records, or from knowledgeable school staff, family, or friends as appropriate.

(c) Project Staff. Project staff were chosen on the basis of their relevance to the topics included in the Project Staff Questionnaire and the particular project components for which they were responsible. In general, all paid staff who worked at least half time were surveyed. Any staff member in charge of a program component was also contacted.

Exceptions:

- Small projects: In small projects with only part-time staff, and with no one, excluding the project director, working half time or more, the one or two non-clerical staff members who worked at least 20% of full time (supported in whole or part by Part A) were asked to fill out staff questionnaires.
- Large projects: In projects with ten or more non-clerical staff working half time or more, and at least partially supported by Part A, a sample of staff members was selected by the project director based upon a list of the numbers and types of staff provided by the field staff.

Project staff were given the Project Staff Questionnaire during the spring data collection period. Some were also asked by their project director during the fall to complete certain sections of the Overview of Project Scope and Component Description form, if relevant to their project assignment.

(d) Parent Committee Chairpersons and Members. Chairpersons and two other officers of each of the 115 Part A parent committees were contacted. Chairpersons were interviewed in the fall. The two officers and chairperson were surveyed, using the Parent Committee Questionnaire, during the spring data collection period. If no chairperson was available, vice-chairpersons were contacted. If no designated chairperson or vice-chairperson currently existed, the most senior or experienced member of the committee was contacted.

(e) American Indian/Alaska Native Community Representatives and Tribal Leaders. These respondents were interviewed during the spring data collection period using the Indian Tribal and Community Leader Interview Guide. As with parents, this data source was considered highly useful for determining: (a) whether those outside the project administrative structure felt that the students being served benefited from project activities and (b) whether the project accomplished certain culturally related goals considered important to the Indian community and leaders.

One community representative or tribal leader was to be interviewed in each of the 115 local project settings. The identity of the most appropriate individual to interview was not always readily apparent, especially in urban projects where Indian community leaders may not be easily visible, and in multitribal settings where a number of leaders were suitable to interview. Therefore, it was the responsibility of the data collector to determine onsite whom to interview, based upon the following criteria:

- The chairperson of the tribal education committee or his/her designee;
- The chairperson of the urban Indian center's education committee or his/her designee; or
- If neither of these was present, the person identified by most parents as the most influential Indian individual in the district concerned with education, who was not employed by the project or otherwise included in the survey.

If two or more distinct tribes or factions were present within a school district, a representative from each was selected.

(f) Students. Probability samples of students were drawn in each of three grade level ranges: 4-6, 7-9, and 10-12. (The grade range of Pre K-3 was not considered suitable for study purposes.) That is, for sampling purposes, each grade-level range was treated as a separate population to be sampled. The objective was to obtain a sample of students within each grade range, so that every eligible student within the grade range in the entire population had an equal chance of being in the sample. For various practical reasons, that could not be achieved fully.

- Probability formula -- sampling students within projects. The following probability formula was applicable for sampling students within projects. It was applied to each grade range separately. The formula is:

  $$F_{ij} = P_i \, f_{ij}$$

  where F_{ij} is the overall probability which the jth student in the ith project had of being in the sample, P_i is the probability which the ith project had of being selected, and f_{ij} is the probability which the jth student in the ith project had of being selected, given that the project had already been selected.

  Within a grade range and project, all students were to be selected with equal probabilities. Therefore, f_{ij} may be simply expressed as f_i, the sampling fraction to be applied within the project in question. Also, in this case F_{ij} became F_i.

  Since F_i was constant for all students in a grade range, then all students in the population had the same chance of being in the sample. Since the sampling was such that F_i was constant, that constant became, in effect, an overall sampling fraction that was applicable to the entire population. Three constant values of F were determined, one for each of the three grade ranges. These values of F were determined with an expectation that a sample of at least 4,000 students in each grade range would be obtained. Then, for each grade-level range, values of f_i (within project sampling fractions) were computed as follows:

  $$f_i = \frac{F}{P_i}$$

  Where,

  F is the overall sampling fraction;

  P_i, as explained above, is the probability which the ith project had of being in the sample; and

  f_i is the sampling fraction applied to the ith project in the sample.

- Sampling within schools. In general, each project in the sample presented a different sampling problem, owing to varying numbers and sizes of schools and grades at each school. In projects where all schools were included in the sample, the values of f_i, as calculated above, were directly applicable to students within all schools in the project. In projects where a sample of schools was selected, the within-project sampling fractions had to be resolved into within-school sampling fractions using a probability formula similar to the one above. When a sample of schools was selected, the schools were stratified, and one school was selected from each stratum. Frequently, a stratum contained one school; e.g., all students in a grade might have been attending the same school. Such a school had a probability equal to one of being in the sample. (It is not feasible to discuss the numerous patterns that were found and how the sampling of schools was performed in all kinds of situations.)

In general, for any given grade, there were at least two schools in the sample, unless all students in the grade went to the same school.

It was not possible to assemble in a central location lists of all eligible students in sample schools. Thus, sampling within schools needed to be very simple. The sampling fractions in decimal form were translated into integer fractions; for example, .15 and .39 became 1/7 and 2/5. In general, the calculated sampling fractions to be applied within schools were larger than 1/10, and many were 1/2 or larger. Considerations involving simplicity and public relations often led to a decision, especially when the sampling fractions were 1/2 or greater, to include all eligible students in a sample school. That is, in some schools the sampling fraction within the school was equal to one rather than to the fraction calculated.

The sample of students was chosen from the roster of students being served by the project. In most instances, this corresponded to the total number of Indian/Alaska Native students certified as eligible for service through having Indian Certification Forms (OE Form 506) on file with the Part A project director's office. In some cases, the number of students being served differed from the total number of 506 forms on file. In such instances, the sampling frame of students being served by the project in each of the three grade level ranges (which includes the Form 506 listings) was the basis for sampling.

- Allowances for attrition. The actual sample of students was drawn at the onset of the school year -- in most cases from a master roster that was supplied by the local project and classified by school and grade level. The sizes of sample chosen allowed for attrition expected during the school year. In some projects, the attrition rate was expected to be larger than others. Therefore, project directors were contacted before the fall visits and asked to supply estimates by grade level range of the magnitude of attrition rate in that setting. These estimates were used in the local site sampling of students to help ensure that desired sample sizes would be achieved.

- Data collected. The types of information gathered from students varied with the grade-level range and time of year. All sampled students in grades 4-12 received Parts I and II of the Student Questionnaire during both the fall and spring data collection periods. These sections gathered information about student participation in project activities and ratings of school climate, attitude toward school, Indian identification and pride, self-concept, and related dimensions (all known to be focuses of Part A projects). These sections were used on two occasions so that pre- and post-school year shifts in these dimensions could be measured and correlated with the students' reported participation in Part A Program activities. Thus, those students reporting little contact with program activities became a natural comparison group with those reporting relatively moderate or more extensive contact with Part A. Data from students who had participated in certain types of activities could also be compared directly with data from students who had been in other activities.

In the spring, those students considered to have participated sufficiently in Part A activities, based on Part I item responses, received Part III,[9] which dealt with effects related to culturally related topics and activities. Students in grades 10-12 involved with project-related counseling activities (career or academic) also received Part IV, which was a brief set of questions pertaining to their knowledge of post-secondary opportunities.

- Sample sizes. With respect to the sample sizes being used, approximately 5,000 students per grade-level range were included in the fall data collection. Owing to attrition of various types, the number contacted in the spring period was reduced to approximately 4,000. Thus the sample for the latter period corresponds to about 33 students per sampled project per grade-level range, or about 11 students in each of the targeted grades.

As indicated, the initial sampling fractions or sizes reflected student dropout and attrition. It was expected that approximately 4,000 students in each grade range would be given questionnaires during the spring data collection period. (Attrition by type of students was considered in the impact analyses so that results were not artifactually attributed to project impact.) The combined effects of attrition (particularly at the high school or grade 10-12 range) and subsampling of students not receiving certain project components reduced the total number of sampled students receiving the spring data collection forms by approximately 20%. About 4,000 students per grade range comprised the total data base of students having both pre- and post-school year measures on Part I of the Student Questionnaires.

Overall, if a project was serving each of the grades 4-12, the total sample size would be about 100 students per sampled project. None of these sample sizes seemed excessive. Instead, they represented fairly small numbers of students from any grade-level range per project, grade level, or sampled project per set. The sample sizes, however, provided sufficient data for conducting a variety of analyses dealing with the type and level of impact, and for determining whether certain factors such as student characteristics (e.g., grade level, age, sex, extent of project participation) affected those impact findings.

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[9] Students in grades 4-6 received a slightly more simplified version of Parts II and III than students in grades 7-12.

In particular, extent of participation in project activities was an important variable, since pre-post school year shifts in attitude toward school, pride in being an Indian, and self-concept, for example, were then related to extent and type of program participation. Those who received relatively light amounts of certain program components therefore became a natural comparison group (after controlling for student characteristics and similar factors) for those who received a greater amount of program exposure. Having sufficient sample sizes at each grade-level range made such analyses extremely useful and sound. Having such comparisons as baselines for detecting project participation effects was also important to the study.

One of the most difficult aspects of the study was the construction of the student sample. When the data collection plan was being developed, there was considerable uncertainty concerning the size of the relevant student population. The school districts included in the sample were contacted prior to site visits, and were requested to provide estimates of the number of Indian students in grades 4-12 who were in schools and grade levels where they could be receiving Part A services in the coming year. Based on the responses of districts, it was estimated that there were approximately 50,000 eligible students in grades 4-12 in the 119 selected districts.

It was recognized, however, that this estimate of eligible students was imprecise because it assumed that district administrators: (1) could accurately predict the number of Indian students; (2) would provide unbiased estimates of those numbers to an evaluation contractor working for the federal government; and (3) knew which schools and grade levels would be receiving Part A services. Because of the imprecision of the population estimate, it was decided that probability sampling would be done using sampling fractions rather than specific target sample sizes. (Thus, for example, data collectors were told to have "1/3" of all Indian students in a school complete questionnaires rather than "40" students.) In this way, even if the estimates of eligible Indian students were incorrect, the probabilities of selection for all students would remain approximately equal and adhere to the original sampling design.

The desired sample size was 15,000 students. Because it seemed possible that the population estimate of 50,000 eligible students was positively biased, the sampling fractions were adjusted upward by 15-20 percent to assure a sample of at least 15,000 students. During data collection, additional information was obtained concerning the number of Part A-eligible students in the selected projects. This information confirmed that the initial estimate of eligible students was too large, and indicated that the actual total number of such students was closer to 41,000. The sampling fractions which were used thus should have produced a sample of slightly fewer than 15,000 students.

The actual number of questionnaires completed in the fall data collection was 13,538. This number was inflated somewhat by 20 sites, from which approximately 1500 more questionnaires were received than were requested, based on the stipulated sampling fraction. At one site, for example, school district officials requested that all Indian students be included when only a sample was needed. Analyses were subsequently performed to determine if the inclusion of these additional students would significantly affect the student results. The analyses showed no major effects, so the students were included in the analyses. Based on the best available estimates, therefore, the loss rate for fall student questionnaires was in the range of 15-20 percent. Some of that loss can be attributed to the four of 119 sites from which no student data had been received. Approximately 400 student questionnaires were expected from those sites. In addition, approximately 100 questionnaires were received which were unusable because they were incorrectly or only minimally filled out. These questionnaires covered a variety of projects, schools and grades. The remaining data loss can be attributed to students who either: (1) were not attending school on the day of testing or (2) were in school but failed to attend the survey session.

It is reasonable to conjecture that the data loss from the student sample could have biased the results from the student questionnaires. That is, it could be hypothesized that the students who did not complete questionnaires had generally poorer attendance, poorer academic achievement, and relatively less positive attitudes toward school and themselves did the students who completed questionnaires. If such bias existed, however, it should not have had a major effect on the study results. Assuming a 15 percent loss rate, even if the nonrespondents were a full standard deviation below the respondents on a given measure (an unlikely amount of bias), the bias in the study mean would have equaled .15 of a standard deviation. Such differences would not have changed any of the major study conclusions.

(g) Parents of Selected Part A Participants. This data source was an important one, both for supplementing and verifying student perceptions of benefits due to participation in project activities, and for gaining an accurate sense of what benefits parents believed their children had received from the project. Therefore, a sample of parents was administered a Parent Interview Guide during the spring data collection period.

The parents who were interviewed were a stratified random subsample of the parents of participating students, who were given the student questionnaires during the fall visits. The number of parents selected for interview purposes varied from site to site, approximately in proportion to the number of students surveyed. At each site, the list of names of selected parents and alternates was provided to the project director, together with a draft letter requesting an interview. The alternate names were used only if problems were encountered which made it impossible to interview a parent on the primary list. Every effort was made to contact, schedule, and interview all parents on the primary list.

The project directors assisted in locating the parents and notifying them of the survey prior to the field staff's arrival. The project director was given the discretion of initiating the letter or making other types of contacts with parents prior to this team's arrival. A list of the parents' telephone numbers and addresses (with directions) was provided by the project directors. All parent interviews were completed while the team was on site.

There was a possibility that during the spring the corresponding student might have either: (a) been absent from school, (b) dropped out of school yet remained a community resident, or (c) moved away with his/her family. Wherever possible, parents selected for the sample were interviewed during the spring visit to the site, regardless of the student's having fallen into any of these three categories. To minimize the attrition of selected parents from the sample, every effort was made to simplify the interview process. (This included using flexible scheduling of local Indian interviewers familiar with neighborhoods and the local language, interviewers' traveling to homes where considered necessary, etc.) However, since extensive follow-up efforts were costly and beyond the scope of this study, parents who had moved from the community were not contacted.

Sampling rates and stratification. As indicated above, to obtain a sample of parents, a subsample of students in the student sample was selected and the parents of students in this subsample were interviewed. To select the subsample, sample students were stratified by grade level and by type of program component in which a student was participating. On the average, the goal was to contact six elementary (grades 4-6), six junior high (7-9), and six high school (10-12) parents.

Overall, 1,546 parents from the 115 sample projects were interviewed. This is an average of over 13 parents per project. Thus, sufficient parent data were available for analysis in terms of several factors that may have been associated with the results (grade level of student, type of program component, sex of student, etc.).

(h) School Principals. The principals or the designated representatives of the schools in the sample were interviewed during the spring data collection period. The principal or the designated representative such as the assistant principal was interviewed by using the Principal Interview Guide, which focused on: (1) the effects of the project in the school and (2) the function of project activities and their coordination with instructional and other school activities.

The goal was to contact the principal of every school in the sample. In small projects with only one sample school, only one principal was contacted. In larger projects, a minimum of two principals were interviewed. The average number of principals surveyed per project was four.

(i) Regular Classroom Teachers. Regular classroom teachers of the Indian/Native students selected from schools where students were surveyed were administered the Teacher Questionnaire in the spring. At the elementary school level, the questionnaire was given to the regular classroom teachers of the Indian/Native students in the sample who had been in the school system for at least two years (i.e., then in at least their third year). At the junior and senior high school levels, these questionnaires were given to the mathematics, English, and social studies teachers of the selected Indian/Native students who had been in the school system for at least two years (i.e., then in at least their third year).

It was believed that the best estimate of impact, as provided by classroom teachers, would come from those teachers who had worked in that school system for two or more years. Such teachers were thought to be able to assess the occurrence of certain effects over the past two years more readily, and to judge whether such trends seemed attributable to Part A project operations and activities. This subset of all regular classroom teachers instructing the selected Indian students was therefore used, rather than the full set of all such teachers.

Some school districts had too many schools, grades, and teachers to include all in the teacher interviewing process. This was especially true at the middle or secondary school levels, where more than one teacher instructed given students. In this case, teachers were subsampled by choosing a random sample of regular classroom teachers. The decision to use subsampling methods was made on a district-by-district basis.

Taking these considerations into account, about 11 teachers per project, or a total of 1,307 teachers, were contacted. This sample size made it possible to prepare comparisons across grade-level ranges (e.g., comparisons of grades 4-6 teachers with those of higher grades on certain common dimensions) and other useful subgroup analyses.

(1) Selection Criteria. The criteria and procedures used by the field staff for the selection of the teacher sample are described below:

- Teachers in the sample: (1) had taught in the school district for at least the current and previous two school years; (2) had at least two eligible Part A students in their classes; and (3) had taught in schools where students were asked to fill out questionnaires.
- Three randomly selected teachers at each grade level (i.e., three from grades 4-6, 7-9, and 10-12, for a maximum of nine per school) in each school where students filled out questionnaires were given teacher questionnaires.

At each elementary school, one regular classroom teacher from each grade 4-6 was given a questionnaire. If there was no teacher at one grade level who met the sampling criteria, a teacher was substituted from the next grade level.

At the junior and senior high school levels (grades 7-9 and 10-12), questionnaires were given to one math, one social studies, and one English teacher at each level in each school.

Exceptions:

- In districts where Part A-eligible students were widely scattered and where fewer than ten Part A-eligible students were at a particular school, a questionnaire was given to the teacher in the school who had the most Part A students. If no teacher had two or more Part A-eligible students in his or her classes, field staff did not distribute any Teacher Questionnaires at that school.
- In schools with fewer than three teachers meeting the sampling criteria, the questionnaire was given to the one or two teachers who had at least two Part A students.
- In school districts with a K-5, 6-8, and 9-12 grade breakdown, K-5 was considered the elementary level, 6-8 junior high, and 9-12 high school. In any school district with other breakdowns, field staff followed the criteria as closely as possible while distributing about the same number of questionnaires.

(2) Procedures. To select the teachers who were asked to complete questionnaires, the field staff identified all teachers in the sample schools who met the study criteria stated above. Principals were asked by project directors to draw up such a list of their teachers prior to field staff arrival. If this was not done, the principal of each school was contacted upon arrival and the sampling criteria were explained. The principal was then requested to identify the teachers at each grade level or in the relevant subject areas who fit the criteria. From this list, one teacher from each grade level or subject area per school was selected by using a random numbers table.

(j) Tutors of Indian Students. During the fall site visit all tutors of Indian students supported through the Part A Program were asked to complete questionnaires describing their characteristics (e.g., sex, experience, number of students served) and characteristics of each of the Indian students they tutored (e.g., grade level, proficiency in reading, math, and other subjects, interest in school, school conduct, amount of tutoring). Project directors were also given a package of these questionnaires and asked to see that they were completed during the year as new tutors or students began to participate in the Program. Project directors were also given a package of Post-Tutorial Follow-Up forms and asked that a form be completed for each student at the time the student stopped receiving tutoring or at the time of the study's spring site visit, whichever came first. During the period between the fall and spring site visits, project directors were reminded several times by letter and telephone to have these forms completed as appropriate. In total, full data were obtained from 329 tutors and 3,526 Indian students.

(k) Cohorts of Post High School Students. In order to assess trends in high school completion and post secondary school activities, a sample of five Indian high school sophomores in each of the following years was selected from each of the visited projects: 1970-71, 1972-72, 1974-75, 1976-77, 1978-79. Indian students were identified by school district staff and the students in each group were selected at random. Information about those selected was then gathered from school records, school staff, family, friends or other available sources. Several projects were located in districts without high schools and were not included in this aspect of the study. In other districts, where there were five or fewer Indian high school sophomores, all Indian suphomores were included. Overall, 2,098 former students were included, or an average of over 18 students per sampled district.

4. Selection of Public School Districts for the Alternative Resources Sample

The population for this sample (3,177 districts) included all eligible public school districts (i.e., those with ten or more American Indian or Alaska Native students and those located in Alaska, California, or Oklahoma) except tribally-controlled schools. This section describes the method of sampling the part of the population of 3,177 districts which were not included in the survey population for the Local Project Impact Evaluation Study.

(a) Sample Design. To draw the sample for the Alternative Resources Study, four major strata were defined according to the number of American Indian or Alaska Native students in the LEAs. Optimum allocation of the sample to these four size strata was not possible, since standard deviations of important parameters within strata were unknown. However, general experience with sampling suggested allocating the sample to the size strata in proportion to the total number of students in each, with an upward adjustment in the size of the sample from the two strata having the smallest number of students. That is, compared to the optimum allocation, an allocation of the sample in proportion to the number of students was expected to undersample the first two strata (those with LEAs having the smallest number of students), particularly the first one.

Within each of the four size strata, the projects were arranged by state within the 12 geocultural regions. A systematic random sample of districts was selected with equal probability within each of the first three size strata. The last, or fourth, stratum (LEAs with a large number of students) was treated as a special case, because the allocation called for a sample of 12 LEAs from a total of 14 within that stratum. The ten largest were selected with probability equal to one. Two of the four smallest in this stratum were in California, and two were in Oklahoma. One LEA was selected at random from the two in California, and one from the two in Oklahoma.

In summary, 108 districts were chosen, 98 by using systematic random sampling with equal probabilities of selection within strata, and ten with probability of certainty.

The selected projects were administered either: (1) the Excluded Projects Telephone Survey Questionnaire or (2) the Non-Funded Districts Telephone Survey Questionnaire. Each version of the form was compatible with the other, and with similar data gathered from the 115 sites. Three types of information were collected by using each version:

- The total amount of federal education funds expended by local school districts on Indian/Native students in grades K-12;

- The number of Indian/Native students served by these funds; and
- The types of special services these students received.

In each district, the relevant administrator was contacted for costs and services/activities information. Typically, this was the district's federal program coordinator. Telephone interviewing was chosen as the most cost-effective way to contact these projects. Site visits would have been needlessly expensive given the data required, and a mail survey was likely to produce a fairly low response rate from districts that did not receive Part A funds. However, by using telephone interviewing, a response rate of at least 90% was expected. With call-backs made as necessary, this response rate was achieved.

5. Weighting of Data from the Impact Sample of 115 Projects

Whether data of a particular kind needed to be weighted was related primarily to whether sampling within projects was involved. As explained above, the sample projects were not selected with equal probabilities and it was clear that "project data" needed to be weighted, owing to the wide range in the probabilities of selection. "Project data" refers to data where there is no sampling within projects, such as data obtained from the project director about his own characteristics or about the project as a whole. In other words, the probabilities involved in the selection of projects are applicable to "project data." "Within project data" refers to data where sampling within projects was involved, the prime example being student data obtained from samples of students within the selected projects. Project data and within project data will be discussed separately.

Of the ten sources of data presented in the section "Sampling of Respondents," the first five did not involve sampling within projects, with the exception of the sampling of parent committee members. The last five all involved sampling within projects, except for some data in a few of the smallest projects where all eligible respondents were included in the survey.

Project data fall into one of two major categories with regard to weighting. The first consists of data where use of reciprocals of probabilities of selection as weights is appropriate with regard to both random sampling error and bias. Such data (e.g. project budgets) are quantitative data. A variable which can range in value from zero (or a small amount) to an amount that is related to the size of project generally belongs in this category. That is, for such a variable, the variance among large projects is much greater than the variance among small projects.

Weights for data in the first category have been referred to in this study as the W_1 set of weights.[10] These weights are the reciprocals of the probabilities which the projects had of being selected, multiplied by a constant that makes the sum of the weights equal to 865, which is the total number of projects in the survey population. In a probability or sampling sense, the W_1 weights provide unbiased estimates. Also, for variables in the first category, the W_1 weights are most appropriate in the interest of minimizing the standard error of the estimates, or, conversely, providing optimal precision.

Most of the project data are in the second category. This category includes variables where the variance of the variable has little if any relation to size of project. That is, its variance among large projects is roughly the same as its variance among small projects. Attribute or "yes-no" type of data are included in this category. Examples are types of programs sponsored by a project or certain characteristics of a project director. Were the W_1 weights applied to data in this category, the standard errors of estimates would be too large. Not weighting such data would provide estimates with much lower sampling error; however, the potential for bias in the estimates is too great to ignore.

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[10] Found on computer data files as the variable WT1.

Thus, a second set of weights, referred to as W_2,[11] was prepared with an objective of minimizing the mean square errors of the estimates. Mean square error is a combined measure of bias and random sampling error. The W_2 weights were formed by adding a constant to each W_1 weight and scaling them so that the weights would add to 865. The constant was chosen so that the maximum W_2 weight within a region would not be more than about four times larger than the smallest weight within the region.

Data from parent committees were regarded as project data, even though some data were obtained from a sample of individual members of a committee. In this case, the committee, rather than a committee member, was treated as the unit of analysis. In other words, if data from all parent committees in the population of 865 projects had been obtained, it was assumed that committees would be the tabulation units. All committees would then have the same weight, regardless of size. Under this concept of the parameters' being estimated and considering the kind of data involved, the W_2 weights were applied as follows. If there were data from n members of a committee, the weight for each of the n was W_2/n, where W_2 is the weight for the project involved. Then, the sum of the weights for the n members is equal to W_2 and the sum of all weights totals 865, the total number of projects, rather than a population total number of committee members.

Tribal/committee leader data consisted of two or three respondents from some projects, although there was a relatively small number of projects with more than one tribal leader respondent. As in the case of committee members, weights were assigned equally to all respondents from the same project, so that the sum of the weights for respondents in the project was equal to the projects' W_2 weight.

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[11] Found on computer data files as the variable WT2.

Adjustment for non-response. When data for one or more of the 115 projects were missing, the weights (either the W_1 or W_2 weights, whichever applied) were adjusted within regions so the total weight for a region remained unchanged. For example, suppose there were 11 sample projects in a region and data for one project was missing. Assume the sum of the weights for all 11 projects is 95.0 and the sum of the weights for the ten projects with data is 87.6. The ten weights would be adjusted upward by the factor 95.0/87.6 = 1.08. In case a region was small (say, five or six projects) and data were missing for one or more projects in it, the region would have been combined with another region so the adjustment factor would not be large and the adjustment would be spread over several projects.

Within-project data. A major part of the within-project data consisted of data from students, and it will be discussed first. As explained earlier, sampling fractions for sampling students within projects were calculated to give every student, in the population of 865 projects, an equal chance of being in the sample. For various practical reasons, this was not completely accomplished. The question for consideration was then whether the departures from equal probability were sufficient so that weighting would be advisable. To answer that question, a set of weights (applicable to student data collected in the spring and based on reciprocals of sampling fractions) was calculated and studied. Also, some data were weighted and the results were compared with corresponding results when no weighting was done. A conclusion was reached that differences between weighted and unweighted results would be trivial or unimportant. Moreover, when analytical processes are complicated, the weighting of individual data adds much to the burden of processing. Thus, a decision was reached to treat the student data as self-weighted.

Since the numbers of parents in the sample from project to project were approximately in proportion to numbers of students in the sample, it follows that weighting parent data was unnecessary.

Two other sources of within-project data were principals and school teachers. These data were also approximately self-weighted and were not weighted because weighting would not have improved the results by an appreciable amount, if at all.

For the post-high school student sample, an upper limit of 25 cases per project was placed on the sample. This meant that large projects were somewhat underrepresented, even though large projects had higher probabilities of being in the sample. The weight of each project was calculated and examined. After reviewing the pattern of these weights, a straight-forward set of alternate weights was regarded as adequate. Data for sample students in the 18 largest projects were therefore given a weight of 2.0 and data for all other students received a weight of 1.0.[12]

6. Weighting of Data from the Sample for the Alternative Resources Study

For sampling purposes, there were four subpopulations of the population to which the Alternative Resources Study applied. The four subpopulations are shown in Table 3-10. The first subpopulation is the population of 865 districts that was defined for the Impact Evaluation Study. The W_1 set of weights described above is applicable to the sample data from this subpopulation. In the second subpopulation, equal probabilities of selection were used within strata and the stratum weights shown in Table 3-10 expand the sample from this subpopulation to estimates of totals for this subpopulation.

The other two subpopulations are small and the weights shown in Table 3-10 also expand sample data to estimates of totals for these two subpopulations. Thus, estimates of totals for each of the four subpopulations were added together to obtain estimates for the entire population.

7. Accuracy of Estimates

This section contains the standard errors for those Part A Program characteristics which were selected as being particularly interesting to policymakers and planners. Some guidelines for interpreting these standard errors and how they were computed are also included.

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[12] Found on computer data files as the variable WT3.

TABLE 3-10

PATTERNS OF WEIGHTS APPLIED TO SUBPOPULATIONS OF THE ALTERNATIVE RESOURCES SUBSTUDY

Subpopulation	Number of Districts in Population Having Indian Students	Number of Districts Included in Sample	Assigned Weight
a. Funded projects for three years with more than 30 Indian students	865	119	W_1*
b. Non-funded districts (N=2179; 449 without Indian students)	1730	100	By stratum (number of Indian students):
Four Strata	855	20	42.75
	719	43	16.72
	144	25	5.76
	12	12	1.00
c. Projects funded in 1979 and 1980, and not in 1981	81	5	Four with weight=20.0; one with weight=1.0 (which was sampled with probability equal to 1 due to its large size)
d. Projects funded with fewer than 30 Indian students	52	3	17.33

*An unbiased weighting factor; see the project data weighting discussion for a fuller explanation.

Two general types of errors are commonly recognized in deriving summary statistics or estimates based on a sample survey -- sampling and nonsampling errors. Sampling errors occur because the obtained data are based on a probability sample rather than the entire population. Nonsampling errors arise from many sources other than sampling, and represent an entire area of concern in themselves. They can arise from any of the following factors: inability to obtain information about all cases in the sample; definitional difficulties which may vary across local projects or respondents; how questions are interpreted; respondents' inability or unwillingness to provide accurate and correct information; and a wide range of other measurement, processing, and responding errors.

The national-level estimates provided here are obtained from sample data, and therefore vary somewhat from the corresponding statistics that would have been obtained had a complete survey or a census yielding 100% response been conducted using the same data collection forms, procedures, and instructions. Furthermore, any sample is only one of a large number of possible samples (of the same size) that could have been selected by using the same sampling design and universe of projects or other types of sampling units. Estimates derived from these different samples will generally differ from each other. Such a difference between a sample estimate and the average of all possible samples (drawn from the same universe) is called a sampling deviation. In turn, the standard or sampling error of a survey estimate is a measure of the variation among the estimates from all possible samples. It therefore is a measure of precision with which an estimate from a particular sample approximates the average result of all possible samples.

In general, the sampling procedures and sample sizes used in this study were selected to minimize error to the extent possible within reasonable costs, recognizing the finite resources available. In addition, while the standard error partially measures the effect of nonsampling errors, it does not measure systematic biases in the data. Bias (or misrepresentativeness) is the difference, averaged over all possible samples, between the estimate and the true value. With these factors in mind, the overall accuracy of a survey result depends on both: (a) the sampling and nonsampling errors, measured by the standard error and (b) the bias and other types of nonsampling error, not measured by the standard error.

The sample estimate and an estimate of its standard error permits the development of interval estimates with prescribed confidence that the interval includes the average result of all possible samples. For example, one of the most frequently cited confidence interval sizes is the 95% confidence interval. Conceptually, this means that if all possible samples were selected, if each was surveyed under essentially the same conditions, and an estimate and its estimated standard error were calculated from each sample, approximately 95 percent of the intervals from 2 standard errors below the estimate to 2 standard errors above the estimate would include the average value of all possible samples. (An interval from 2 standard errors below the estimate and 2 standard errors above the estimate is called a "95-percent confidence interval"; see Gonzalez, Ogue, Shapiro, and Tepping, 1975.[13])

Sampling error. As only one primary sampling unit (a project) was selected from a stratum, it is necessary to use approximation methods to estimate sampling variances. Techniques known as collapsed stratum and ultimate cluster were used. A collapsed (or pseudo) stratum is a combination of two or more of the original strata used in the selection of projects. The objective is to combine similar strata and total the combinations (pseudo strata) as though they were the strata used in the design and selection of the sample. An "ultimate cluster" is the sample of units selected from a primary sampling unit, which in our case is a project.

Let n_h equal the number of ultimate clusters in pseudo stratum n. Within each stratum, n_h estimates were prepared, one from the data for each ultimate cluster. Each of these estimates was an estimate of a total, an average, or a percentage for the pseudo stratum as a whole. Let x_{hi} represent the estimate based on data from the ith cluster in stratum n. For purposes of estimating sampling variance, the values of x_{hi} are treated as a stratified random sample with proportional representation from each pseudo stratum. That is, the well known variance formula for stratified random sampling with proportional representation from strata was applied. The estimates of variance tend to overestimate the actual variances, which are probably of very little importance for practical purposes.

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[13] Gonzalez, M., Orgue, J., Shapiro, G. & Tepping, B. Standards for discussion and presentation of errors in survey and census data. Journal of the American Statistical Association, 1975, 70, Part II.

As discussed above, some data did not involve sampling within projects. In this case, the same approach to estimating sampling variance is applicable. The value of the variable for a project multiplied by a appropriate expansion factor or weight becomes x_{hi}, an estimate for the entire pseudo stratum in question.

The estimates of the standard error for selected estimates are presented in Table 3-11. In general, the largest standard errors are for estimates that are based on data from district administrators, project directors, parent committee chairpersons, and other data where the sample size or number of units of observation is 115. Estimates based on data from students, teachers, parents, and other sources that involve much larger numbers of units of observations have the smallest standard error. Table 3-11 shows that for estimates of percentages, the standard errors are in the neighborhood of 2 percentage points where the reporting units are students, teachers, etc. On the other hand, where the percentage estimates are percentages of projects having particular characteristics (e.g., percentage of projects having various program components) the standard errors are on the order of 5 or 6 percentage points.

8. Procedures Used for Dealing With Item Nonresponse

The weighting approaches described above have dealt with the situation where entire questionnaires were completed and needed to be properly (a) weighted to reflect a larger population or (b) weighted, then adjusted to compensate for respondent non-response, enroute to making national-level estimates and correlational use of the obtained data.

TABLE 3-11

ESTIMATED STANDARD ERRORS FOR SELECTED ESTIMATES

Variable No.	Characteristics of Variables		Estimate	Estimated Standard Error
1	Project Director Characteristics			
	% Indian		43.1	9.2
	% Male		55.0	7.8
	% Having a degree		83.1	7.8
	Ave. hours worked/wk		19.0	1.6
2	Program Components			
	% With counseling		48	6.0
	% With home-school coordination		38	5.8
	% With parental cost component		22	5.5
	% With cultural activities		64	5.4
	% With tutorial program		80	3.9
3	Hours Tutored Per Week		4.7	0.2
4	Parent Committee Chairperson			
	% Male		42	8.0
	Ave. number of years on committee		2.3	0.1
5	Indian Students			
	% Leaving before completing H.S.		19	1.6
	% With education beyond H.S.		41	1.8
6	Project Staff			
	% Native		71	3.6
	% Female		84	2.9
	% Employed full time		81	2.7
7	Parent Committee Members			
	% Indian		87	1.7
	% Male		30	2.7
	% Parents		71	2.0
	% Teachers		12	1.7
	% Satisfied with project		89	2.1
8	Indian Parents who think			
	Project has helped their children to get better grades	%	68	2.1
	Project has helped them personally	%	57	2.2

TABLE 3-11 (Continued)

Variable No.	Characteristics of Variables		Estimate	Estimated Standard Error
9	School Principals			
	Satisfied with quality of project	%	89	1.9
	Believe project is valuable	%	89	1.9
10	Teachers have made changes			
	In curriculum material	%	47	2.0
	In teaching approach	%	41	2.0
	Teachers believe			
	More parents are involved	%	60	2.8
	Project is benefitting students	%	78	2.4
11	Student Achievement Test Scores			
	Reading - ave. score (in T-score units)		47.4	.55
	Mathematics - ave. score (in T-score units)		47.8	.51
12	Average Days Attended School, 1980		162.4	.90

In addition, there were instances of item non-response which occurred across the various respondents and types of data collection instruments used in the study. A review of all items having such non-response was made during the data management phase of the study. No consistent or systematic pattern of item non-response seemed to exist and instead was apparently scattered. No attempt, therefore, was made to impute data values for those items to the projects, and to the various respondents which were included in the sample and who supplied less than 100% completion of the information sought from them. Although several alternative methods exist in the field for making such imputation efforts (such as expanding the weights assigned to respondents on given items to reflect the proportion of non-respondents), it was felt that any such method would be relatively imprecise. Overall, item non-response represented a relatively small fraction of the data. As such, it was judged that adjustments would not contribute materially to changing the estimates reported or to improving the precision of the findings presented.

With that as a guideline, it also was felt that statistical tables and the discussion of the results contained in them should clearly present the number of unweighted and weighted cases on which findings are based. Similarly, findings presented on a subset of all respondents indicate the size of that subset, for the sake of making the findings as lucid as possible. To make tables more readable, when all variables within the given table are based on only slightly varying numbers of respondents (i.e., within 10 percent of the maximum number) the range of cases is provided as a footnote to the table.

CHAPTER 4: IMPLEMENTATION OF THE STUDY DESIGN AND METHODS

Summary of Tasks

During the initial stages of the study, the goal was to acquire a thorough understanding of the Part A Program at all levels -- congressional, Department of Education, and district/project level. To gain this understanding, an evaluability assessment was conducted during the first several months of the study.

As the study began, there was much discussion of the limitations and opportunities for conducting such an impact evaluation. These became more clear as the evaluability assessment (the Preliminary and Exploratory phase) progressed. The approach from the onset was to maintain a flexibility of design and operation that would be open and able to capture the diverse program and its human contexts. One large concern was to ensure and maintain sensitivity to, and involvement of, the program participants and other potential users of the evaluation results. Again, this required maintaining a sensitivity and responsiveness to the suggestions, observations, and opinions of individuals and groups at all levels of Part A involvement.

To describe this further, the initial tasks were to acquire a thorough knowledge of the Part A Program at all levels within its political, governmental, social, economic, and local contexts. Prior to any evaluation design considerations, the evaluability assessment required the contractor to examine the legislation, regulations, congressional hearings, budget and program justifications, program history, financial history, the current program and its status, Part A records and applications, and the National

Advisory Committee on Indian Education (NACIE) Annual Reports. In other words, germane documents included any written material that could be drawn from the public and from governmental records which were worthy of providing insights into the Program's purpose, characteristics, history and operations.

Discussions and interviews were held with congressional staff involved with the appropriation and authorization committees responsible for the Indian Education Act, as well as Department of Education and Office of Indian Education Program officials. Prior administrators of the Indian Education Program were also interviewed. Visits were made to local projects during the exploratory phase of the study. (A total of 20 projects in various settings, representing a diverse cross-section, were visited.)

In addition, a Technical Advisory Panel was established, whose function was to provide guidance and direction throughout the study. This panel was made up of individuals from the Department of Education, the Indian Education Program office, Bureau of Indian Affairs, the NACIE Board, and Indian educators representing special fields of expertise. (Seven of the eleven members were Indian.) Over 20 Indian consultants were also hired and contributed to the design of the initial study and the data collection instruments.

In summary, the purpose of this phase of the study was the acquisition of information and knowledge about the Part A Program from all possible perspectives and sources. This was accomplished by:

- Research and assessments of the legislation, regulations, policies, and administration involving the Part A Program and of current and past research studies and evaluations of, and about, Indian education.
- Reviews of IEP records, files, Part A-funded applications, NACIE Annual Reports, congressional hearings, and Office of Indian Education budget justifications to the Congress.
- Interviews with congressional staff, Department of Education officials, and the Indian Education Program officials and staff.

- Press releases to inform Indian/Native people about the evaluation project and to solicit recommendations and comments.

- Consultations with education specialists with emphasis upon Indian/Native educators with diverse expertise from different tribes and regions.

- Technical Advisory Panel meetings to provide periodic review and approval of the work as it progressed.

- Information and data collected on the operations and administration of the Office of Indian Education for the period of 1976-80; the 1,094 funded Part A projects for 1980-81; and the 1,050 funded Part A projects for 1981-82.

- Preliminary site visits to nine Part A projects to obtain a first-hand view of some diverse projects in different areas of the country.

- Field tests of the interview forms, questionnaires, and field data collection procedures at 13 Part A projects in different parts of the country, representing diverse program activities, Indian student population size, and locations (i.e., rural, urban, reservation, Alaska Native village).

Development and Implementation

During the developmental and design phases, consultations took place at the federal level with staff of relevant congressional committees; the Office of Indian Education; the Office of Planning and Budget in USED; the Bureau of Indian Affairs; and the Bureau of the Census. There were also consultations with staff of local projects and their school districts, Indian/Native parents and students, representatives of national Indian organizations, and experts on Indian education and evaluation design from across the U.S. Study materials, including the completed instrumentation package, were provided to Dr. Ron Torgeson of the North Dakota State Education Agency, as the official liaison of the Council of Chief State School Officers (Committee on Evaluation and Information Systems), prior to the visits to school districts.

Study staff worked with a Technical Advisory Panel of nine members, seven of whom were Indians, with recognized expertise in various areas of Indian education, evaluation, and testing and measurement, including two who represented the National Advisory Council on Indian Education (NACIE). The Panel advised the study staff on matters dealing with the relationship of the study to previous research efforts, appropriate policy questions to address, and matters of instrument design, data collection, and analysis procedures. The names and affiliations of Panel members are listed in Appendix 2.

A large number of individuals with expertise in Indian education, evaluation design, testing and measurement, data analysis, and field data collection were also consulted at various points to assist in developing the design and instrumentation or in reviewing that which was developed. The names and affiliations of these individuals appear at the front of this document.

1. Instrument Development

One of the most critical aspects of a study is the development of instruments which sufficiently cover the whole range of required and desirable data and information. Based upon the eight major study questions, preliminary instruments were developed which were addressed to specific respondents and data/information sources.

In developing the survey instruments for this study, systematic attempts were made to use directly or to adapt other, already proven, questionnaires developed in various relevant studies. These included data collection instruments (or topic categories) used by: (a) Communications Technology Corporation (1978), dealing with Indian education; (b) System Development Corporation, used in the Title I Sustaining Effects Study (1978) and the Parental Involvement Study (1981); (c) Research Triangle Institute (1975), dealing with post-secondary student experiences, in the National Longitudinal Study of the High School Class of 1972; (d) similar work performed by Rand Corporation (1980) dealing with self-concept and aspirations, as well as well-regarded investigations of self-concept by Rosenberg (1965); and (e) other topic categories in the area of attitude toward school by the state of Pennsylvania Department of Education

(1980). Other studies by Abdel-Mawgood and Hatch (1972), Erickson et al. (1979) and SRI International (1981) have also been used where appropriate.[1]

Indian educators representing many tribes in various parts of the U.S. were identified and selected for their diverse kinds of experience and expertise and asked to help in the development and refinement of these instruments. The draft instruments initially developed by the study staff were mailed to these individuals prior to field testing. Upon review of the returned comments, revisions were made and field tests at various projects were scheduled. Also solicited and used were the comments and suggestions of the members of the study Technical Advisory Panel (see Appendix 2) throughout the development of the instruments and data collection procedures.

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[1] References cited above are the following:

(a) Communications Technology Corporation, op cit.

(b) System Development Corporation. The measures and variables used in the sustaining effects study (Report #9); Study of parental involvement in four federal education programs (see Descriptive Framework, Working Paper #2).

(c) Research Triangle Institute. The national longitudinal study of the high school class of 1972. Symposium presentation at the American Educational Research Association Annual Meeting, 1975.

(d) Rand Corporation. Effects of postsecondary experiences on aspirations, attitudes, and self-conceptions, 1980.

(e) Rosenberg, M. Society and the adolescent self-image. Princeton University Press, 1965.

(f) Pennsylvania Department of Education, Division of Educational Quality Assessment. Manual for Interpreting Secondary School Reports, 1980 (Also, Manuals for Elementary and Intermediate School Reports.)

(g) Abdel-Mawgood, M.E. & Hatch, G. The self-concept of academic ability among American Indian students. A Research Report. Central Washington State College, 1972.

(h) Erickson, E., MacDonald, L., Manley-Casimir, M. & Busk, P., Characteristics and relationships in public and independent schools: COFIS baseline survey interim report. San Francisco: Center for Research on Private Education, University of San Francisco; and Vancouver, British Columbia: Educational Research Institute of British Columbia, 1979.

(i) SRI International. Teacher corps evaluation study. Menlo Park, CA, 1981.

The instruments were field tested in three cycles, with several Part A projects visited during each cycle. The instruments and procedures were modified following each field testing cycle. Thus, additional modifications and refinements were made based upon the results of administering the forms, as well as from critical reviews by project and school district staff at each site visited.

A diverse group of projects was selected and visited, representing a variety of activity orientations, project sizes and locations (i.e., rural, urban, village, reservation). The Part A projects in the following communities were visited:

Grand Rapids, Michigan
Cass Lake, Minnesota
Arlee, Montana
Dillingham, Alaska
Missoula, Montana
Roman, Montana
Jemez Springs, New Mexico
Wisconsin Dells, Wisconsin
Ft. Yates, North Dakota
Harrold, South Dakota
Tulsa, Oklahoma
Ft. Covington, New York

After the final round of field testing, the revised forms were again sent to the study's Indian consultants (see Appendix 3) for a final review and comments.

Specifically, a total of 33 discrete instruments were developed for the study. (See Table 4-1 for their listing and the number of respondents to each.) During the fall data collection period, three of the nine forms were structured interviews; two were self-administered questionnaires; and four were forms covering recorded project and district descriptive data and files, and records data. For the spring data collection, three of the 24 forms were structured interviews; nine were self-administered questionnaires; ten were forms for recording project, district, and student related data, including data on project and student tutorial activities; one form was used for telephone interviews during the Alternative Resources Study; and one form was based on composite indices developed from other forms.

TABLE 4-1

INDIAN EDUCATION IMPACT EVALUATION STUDY INSTRUMENTS

INSTRUMENTS	
FALL INSTRUMENTS	Respondents
LEA Administrator Interview Guide	154
Project Director/Coordinator Interview Guide	114
Parent Committee Chairperson Interview Guide	114
Project Overview Questionnaire	114
Program Components	
I. General Project Information	107
II. Cultural Activities Component	74
III. Counseling Program Component	58
IV. Home-School Coordination Component	51
V. Parental Cost Component	27
VI. Tutorial/Special Academic Program Component	90
Student Questionnaire, Parts I and II, Grades 4-6	5393
Student Questionnaire, Parts I-IV, Grades 7-12	8145
Post High School Student Follow-up Survey	2098
Document Review Guide	115
Student Attendance Section (of Document Review Form)	8376 students
SPRING INSTRUMENTS	
LEA Administrator Interview Guide	109
Project Director/Coordinator Questionnaire	108
Tutor Characteristics	329
Characteristics of Tutored Students/Post Tutorial	3528
Project Staff Questionnaire	413
Parent Committee Questionnaire	290
Parent Interview Guide	1546

TABLE 4-1 (Continued)

Student Questionnaire, Grades 4-6	5201
Student Questionnaire, Grades 7-12	7369
Principal Questionnaire	450
Teacher Questionnaire	1307
Indian Community/Tribal Leader Interview Guide	102
Student Information Form (Reading & Math Test Scores)	6425 students
District Test Scores Form	46
Total Public School Enrollment Levels by Grade and Year	106
District Indian Enrollment Levels Form	105
Field Staff Summary Form (not ADP-processed)	104
Field Staff Summary Form Abstract (Part of Section C only)	104
Field Staff Summary Form (Items 5A-9L)	104
Equal Employment Abstract Form	101
Alternate Resources Form (for non-Part A-funded projects)	89
Alternate Resources Form (Part A-funded projects)	19
Cultural Overview Summary Form (rescoring of Project Overview Cultural Section data)	74
School Climate Indices Scoring Form	115

2. Field Staff Identification, Training, and Data Collection Procedures

To perform the data collection at the selected sites, American Indian and Alaska Native field staff were identified and selected during July through September, 1981. To the extent possible, individuals were selected who resided in the areas in which they were to make site visits and collect data. (Familiarity with the area, the districts, and the people with whom they would be working was considered highly advantageous.)

All field staff were brought together for two week-long data collection training sessions. The first session took place in early October 1981, one week prior to the fall data collection period. The second session took place during the second week in March 1982, one week prior to the spring data collection period. Both sessions took place at the University of Oklahoma in Norman, courtesy of the American Indian Institute.

The data collectors were trained thoroughly in both qualitative and quantitative data collection concepts, techniques, and procedures. The training during each session dealt with the specific instruments and data collection requirements for each data collection period. The training also included procedures for onsite protocols, scheduling, interviewing techniques, and qualitative inquiry techniques, to name a few. The procedures and routines used by the field staff were designed to enhance consistency and objectivity as well as to minimize deviations of procedure.

The onsite visits ranged from two days to a maximum of six days per site. The fall data collection involved fewer days per site than the spring data collection, which included parent interviews as well as the qualitative inquiry of selected sites. Efforts were also made during the spring visits to follow-up on missing data from the fall.

Local assistants were hired by the team leader at those sites where it was deemed necessary because of the heavy data collection burden. These individuals primarily collected file and records data. In some instances, they also served as interpreters during the parent interviews at those locations where parents spoke their Native languages. In many of the sites, project and district staff were volunteered to assist in the scheduling and actual collection of data. The cooperation and assistance of the district and project staff was extremely high in all but a very few instances. In fact, without the assistance of the locally-hired assistants and, particularly, the project and district staff, the data collection at many of the sites could not have been completed. Also, during both data collection periods, Development Associates' project staff, including the Project Director and Assistant Project Directors, visted a number of sites and assisted in the data collection.

The field data collection staff were responsible for the collection of all data requirements at 115 Part A projects in 29 states (see Appendix 3 for the list of sites). Specifically, data were collected from the following groups of respondents: local school administrators, project directors/coordinators, project staff, parent committee members, school principals, and teachers in those schools where students were surveyed, Indian/Native tribal or community leaders, participating students, and their parents. The structured or quantitative data collection involved the administration of a set of self-administered questionnaires (project director, project staff, principals, teachers, parent committee members), interview guides (parents, Indian/Native tribal or community leaders, district representative), and document review forms to a representative sample of these groups of respondents.

The data collection was divided into two time periods in order to minimize and spread out the burden, as well as to provide the opportunity to collect pre- and post-data from the Indian students in the survey. Questionnaires were administered or interviews were conducted with the following respondents during the fall data collection period (October through early December, 1981): district representatives, project directors, parent committee chairpersons, and students. At this time, descriptive and demographic data were collected regarding the characteristics of the projects themselves and the school districts. During the spring data collection period (March through May, 1982), questionnaires and interviews were administered to the following respondents: the same district representatives interviewed in the fall, project directors, project staff, parent committee officers, parents, students, teachers, principals, and tribal leaders.

In addition to interviews with selected respondents, data from district, school, and project records were collected regarding Indian student attendance, achievement scores, and enrollment levels of those Indian students surveyed. Data were collected relative to the extent of the surveyed students' participation in the Part A Program for the current and previous school years, as well as their participation in the subsidized lunch program (the latter as a measure of socioeconomic status). Data on tutored students were collected in those projects that had a tutorial program, and a thorough follow-up of missing fall data was also conducted during the spring data collection period.

Also collected during the spring were:

- A Field Staff Summary form completed by a member of the data collection team at each site visited;
- A qualitative inquiry at 31 selected sites, completed by a member of the data collection team;
- A School District Employment Summary form for existing staffing and employment data on the districts in the sample, completed by a study team staff member;
- The Alternative Resources Study of 106 public school districts eligible for but not receiving Part A monies, conducted by a Development Associates staff member through telephone interviews; and
- The Small Projects Study of projects of $5,000 or less and having fewer than 30 Indian students, including document reviews, telephone interviews, and visits to three sites.

As an additional method of filling in the gaps in data that came to light after the fall visits, the above mentioned Field Staff Summary form was developed and given to each team. This form was filled out at each site by a team member. It provided the field data collectors with a format for writing down their observations and insights for each site they visited during the spring. This additional information was useful in helping to form a more comprehensive and complete picture of the overall Part A Program, and was also helpful in providing supplementary data to the qualitative inquiry.

The fall qualitative data collection focused on topics relating to the impact of Part A which were either not addressed or only weakly addressed by the survey instruments in this study, and by quantitative research methods in general. It provided information for determining relevant focal topics for each site for spring qualitative data collection, and provided other data needed during spring data collection.

Prior to fall data collection, field staff members were given and became familiar with a set of topics for qualitative data collection in the field. These topics/impact areas, although addressed in the survey instruments, required additional qualitative data to be addressed adequately. In addition, field staff were instructed to remain alert to site phenomena which were relevant to Part A activities and impacts, but did not appear to be addressed by study instruments.

Following the fall data collection, field staff members were asked to write brief narratives regarding (a) the set of topics for qualitative data collection given to them prior to entering the site and (b) any site phenomena which they encountered and considered worthy of further qualitative investigation during the spring data collection.

From these, a finite set of research questions relating to the impact of Part A was generated by the Technical Advisory Panel and study staff. The questions were sufficiently narrow so that they could be addressed by brief, focused, qualitative investigations.

In the spring, topical qualitative inquiries were conducted for an identified subgroup of 31 of the 115 projects in the sample. Data collection was carried out by the same field staff who administered the structured survey instruments. Spring sites were subgrouped according to relevant research questions. This was accomplished by:

- A debriefing of field staff following fall data collection with questions concerning salient site phenomena;
- An examination of the proposed impact questions by the field staff in order to determine which might be relevant to their sites;
- An examination of the unprocessed data from the fall data collection;
- Information from 1981 applications; and
- A final review and selection of topics by the Technical Advisory Panel during a scheduled February 1982 meeting.

In summary, qualitative data relating to the research question(s) selected for each site were gathered, analyzed, and written up by the field staff at that site. A single study staff member acted as editor/analyst for each of the topical studies from all sites, being responsible for reviewing each study, discussing weak points with authors, and performing internal syntheses of the qualitative studies with the results from survey data analysis.

3. Data Processing and Management

By the end of May 1982, all site visits were completed and the majority of data was logged-in. Missing data were determined, and attempts were made to collect it during the summer months of 1982.

Data processing of the fall data was completed in January and began again in April as the spring data started to arrive. Each completed questionnaire was logged-in by site, checked, and coded. Coding manuals were developed for each data collection period, together with response categories for each open-ended item in the interview guides and questionnaires.

All interview, telephone, and data recording and instruments were coded and edited by trained personel. All instruments were reviewed at several levels for incomplete or unreadable responses and inaccurate, out-of-range, implausible, or logically inconsistent entries. All manual editing and insertion of updated information was done by trained coders under supervision. Such informaton included identifiers and sampling weights. All coding was conducted under formal, ongoing supervision, and periodic review of the work done.

Open-ended responses were coded after research analysts versed in Indian education issues reviewed responses and developed coding frames. This was done for all relevant open-ended interview items. Coding frames were reviewed for validity, uniformity, and usability, and revised as needed before given to coders. Coders were trained in the use of these manuals before beginning full-scale work.

In particular, there were three instruments which included a large number of open-ended questions: (1) parent interview forms, (2) the tribal/community leader interview forms, and (3) the parent committee questionnaire. These three forms represented the thoughts, observations, and feelings of the adult members of the Indian or Native community in which the project and school district was located. It was deemed important that the interpretation and coding of the individual answers to these open-ended questions be conducted by American Indian/Alaska Native coders who were familiar with the Part A Program, and the possible subtleties in some of the questions answered from an Indian perspective. Thus, arrangements were made with the Center for Indian Education at Arizona State University to have Indian graduate students do the coding of these instruments.

Five of the coders were enrolled in a special seminar for which they were given academic credit. A three-day training and orientation session was given by the study's deputy project director. The review and coding of these forms took place during a four-week period in July and August, 1982. In general, the processing of the completed instruments occurred as the data arrived from the field. Data processing concluded by the end of August, when data analysis procedures began.

Following manual edit and coding procedures, all forms were grouped by type and turned over to a keypunching facility (Mailing List Systems, Inc.), accompanied by detailed keypunching instructions for each form. All instruments were designed for direct keypunching. In view of the diversity of survey item formats and number of data collection instruments, 100% independent verification by the keypunching facilty was performed.

Computer editing was conducted using specific editing instructions devised for each type of form. This generally consisted of a series of checks for completeness, accuracy, internal consistency, and out-of-range values. Several sets of editing checks were made on each file, and, after each, analysts and research assistants reviewed the types of issues which needed resolution. After several such computer file checks, each file was considered fully usable for composite index development, correlational analyses, and other analytic purposes.

During the period of April through September, 1982, data analysis plans for each study component were drafted, reviewed, and finalized. Several Indian educators, including members of the study's Technical Advisory Panel serving as consultants to the study, assisted in the development of these analytic plans. Indian educators and research specialists played key roles in the following areas:

- Developing analytic plans;
- Conducting analyses;
- Interpreting analytic results;
- Reviewing and commenting on drafts of results and reports; and
- Writing sections of the final report and study monographs.

4. Data Analytic Techniques Used[2]

As cited earlier, the general purpose of this evaluation was to reach some conclusions about the effectiveness of the Part A Entitlement Program. The broad study issue was defined as follows:

To what degree does the Indian Education Act Part A Entitlement Program contribute positively to meeting the special educational and culturally related academic needs of American Indian/Alaska Native children and youth?

The analyses focused on three objectives drawn from this broad study issue:

- To accurately and sensitively describe the range of Part A project objectives, target groups, cultural activities, and program funding patterns;

- To determine the nature and extent of Part A Program impacts on Indian students, Indian parents, and local school districts; and

- To determine what, if any, changes in legislation or regulations will provide a more systematic and effective approach to meeting the educational needs of American Indian children.

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[2] Please note that, in addition to the exposition of techniques described in this section, each chapter of the Final Report includes specific details on how particular techniques were applied to the evaluation issues.

Key analyses used in this evaluation were based on a series of analytic memoranda which recommended analytic techniques and variables to be used and discussed relevant issues. The actual analyses used in the evaluation began with traditional approaches to understanding the descriptive characteristics of variables. Analysts then proceeded to use correlational and more sophisticated analytic procedures in an attempt to understand the relationships among those variables. Analyses were conducted with several types of respondents, to triangulate findings and thus attempt to have a pattern converge.

Wherever possible, several approaches were used to determine that a sufficient basis existed for concluding that a statistically significant and/or meaningful relationship existed. These included using the following approaches: the presence of statistical significance (alpha = .05), percentage differences occurring between comparison groups of at least 10%, and measures of explained variance, such as r^2 or R^2 when using bivariate or multivariate correlation coefficients, respectively, and overall appraisals of how much of a difference was a practical one which had programmatic significance.

The latter decisions were based on familiarity with the dimensions being measured, and the instructional, cultural, or other project activities which likely would have accounted for the obtained result. Such appraisals for practical significance helped place the findings in context and reduced the chance that meaningful findings would be overlooked.

To that end, a series of balanced and comprehensive impact analyses was conducted. For the most part, the key unit of analysis was the Part A Indian education project, as the entity which was operating a funded program. However, it also was recognized that other types of key data sources, such as students and parents, were important in their own right as units of analysis. Several indicators of impact and multiple data sources were used on almost every dimension, to: (a) detect the extent and form of impacts occurring on a given dimension, (b) obtain a consensus from several sources that impact had occurred, and (c) clearly understand the role and extent of Part A effectiveness.

In general, analytic techniques were used in this study to establish relationships between program variables and measures of impact on a variety of dimensions or several data sources. Such techniques were necessary in view of the Part A Program's fairly small and diverse mix of services in some districts. A number of approaches were used to analyze the information gathered. Some approaches were qualitative while others were quantitative. In addition, some approaches were primarily descriptive, while others were quite sophisticated and represented the state-of-the-art in multivariate statistical techniques.

The array of such techniques included the following:

- Factor analyses and psychometric analyses, to establish the best measures of particular dimensions, and to confirm interrelationships across a set of predictor variables;
- Stepwise and hierarchical multiple regression, to ascertain the relative importance and best subset of variables which were related to measures of tutoring or attendance levels, relying on conceptual models of what predictors should first enter the prediction process;
- Path analysis causal modeling approaches, which permitted the assessment of the relative direct and indirect contributions of project activities and similar variables to various important measures;
- General linear modeling multivariate approaches (similar to multivariate analysis of variance techniques), which were used to simultaneously assess relationships between a series of project and contextual factors and the two dependent measures of reading and math standardized test scores, while controlling for project participant-nonparticipant differences; and
- Meta-analytic techniques which used Indian and non-Indian test score comparisons (converted to "effect sizes" in z-score format) so that trend analyses could be synthesized across a series of historical time periods.

However, all of the analytic techniques used in the study had certain common features, which were the following:

- The technique was deemed relevant to address a particular major or related study question;
- Some form of comparison group was used to place the obtained result in context; this might have been: other groups with systematically different characteristics, students receiving services in a different way or from a different source, students or programs tracked over a period of time so

that a trend across time was observable, or other studies' findings from the literature which provided a basis for interpreting and/or contrasting the present study on relevant dimensions;

- All techniques which were used also took into account: the type of impact being assessed, the sample sizes being compared, the number of comparison groups, and the extent and type of missing data.

Also, as is true in many evaluations, certain other techniques were performed which did not provide any more insights than already provided by more straightforward approaches, or which were not useful due to various measurement and design limitations. For example, the study employed canonical correlation techniques to see if a relationship existed between a set of cultural program characteristics and a set of student achievement measures, and stepwise discriminant function techniques to better determine if levels of patterns of student attitudinal scores were more characteristic of program participants than non-participants. Although sometimes useful, in this study these techniques did not improve upon the utility of impact evidence obtained with less complex approaches.

The latest versions of the state-of-the-art computer data processing software packages, Statistical Package for the Social Sciences, (SPSS, release 9.1) and the Statistical Analysis System (SAS, release 79.6) were used for conducting virtually all descriptive and analytic techniques, with the exception of the Hewlett-Packard graphics system which was used for preparing certain line graphs, trend lines, and bar graphs, particularly for attendance analyses. SPSS and SAS provided the flexibility to accomplish a series of study tasks including data base editing, file merges, and statistical analyses such as cross-tabulation, subgroup means, multiple linear regression, general linear modeling, and even more elaborate techniques.

Most analyses were performed on a data base that was designed to permit both file (i.e., particular respondent) and subfile (i.e., subgroups of respondents) analyses. This is because certain analyses were better prepared at the project level, and other analyses at the student, parent, or other individual respondent level. The number of students included in various analyses of attitude, achievement, and attendance relationships is included in Table 4-2.

TABLE 4-2

NUMBERS OF STUDENTS SUPPLYING INFORMATION BY TYPE AND GRADE RANGE

Type of Information	Number of Students 4-6	7-12	Totals
A. Attitudinal Data			
Student Questionnaires - fall	5,328	8,149	13,477
Student Questionnaires - spring	5,173	7,366	12,539
Both fall and spring	4,255	5,665	9,920
B. Attitudinal and Achievement or Attendance Information			
Fall, spring attitudinal and achievement test scores	2,688	2,585	5,273
Fall, spring attitudinal and attendance data	3,280	3,317	6,597
Fall, spring attitudinal, achievement and attendance data	1,622	1,538	3,160
C. Tutoring Information	K-6	7-12	
Fall only	189	211	400
Spring only	129	119	248
Both fall and spring	1,693	1,187	2,880

(a) The Role of Descriptive Techniques. These types of analyses were performed on all impact areas. The techniques were useful in their own right for determining the characteristics of Indian/Native students, program operations and other factors. However, they also were invaluable for gaining a full understanding of how widely the data varied, so that other, more indepth, techniques could be applied.

The descriptive techniques used in the study included most of the widely used approaches, including: frequency and percentage distributions, means, standard deviations, counts, medians, and ratios. Graphic techniques such as bar graphs, trend lines, and scattergrams were used as relevant to highlight the presence of outliers and dispersion, and particular trends across time or across comparison groups, so that their relative levels could be determined. Cross-tabulations, correlation coefficients, and factor analyses were used to establish if and how certain variables were related to each other. Other techniques were less quantitative, and represented tabulations of predominant topics mentioned in narrative responses by respondents, so that prevalent themes could be identified, and the range of discrepancy (i.e., how many respondents did not share that central opinion) could be determined.

Some of the areas of investigation which primarily were examined using descriptive techniques, due to the topics with which they dealt and the levels of measurement suitable for dealing with such topics, were the following:

- Project characteristics and overview summaries of local project operations and emphases;
- Needs and objectives of local projects; assessments of the appropriateness of project emphases and activities;
- Descriptions of cultural programming and activities; appropriateness of cultural activities;
- Tutorial and related activities directed toward enhancing the basic academic skills of Indian students; tutor, student, and program characteristics;
- Parental involvement and relations with the Indian community;
- Perceptions of parents, community members, and tribal leaders of project operations and effectiveness;
- Project representatives' perceptions of the Office of Indian Education, the types of changes in Part A rules, regulations, and legislation which appeared useful to them, and preferences for various approaches to determining student eligibility for services; and
- Levels and longitudinal trends in employment of Indians and Alaska Natives in various public school positions (administrators, principals, teachers, teacher aides, and other personnel).

A series of cross-break variables was used to detect between-group differences in these topic areas (see Table 4-3). Project and student

TABLE 4-3

CROSS-BREAK VARIABLES USED IN DESCRIPTIVE AND IMPACT ANALYSES

A. Project Setting

1. Percentage of Indian students (density) in district (less than 5%; 5.1-70%; over 70%)

2. Residence of most Indians in district (on or near reservation, other rural, urban/non-metropolitan, metropolitan area)

3. More than half of project participants are of the same tribe (yes/no); tribal homogeneity measure

4. Geocultural regions (12 categories)

5. TAC regions (5 categories)

B. Project Emphases and Activities

1. Number of students in district
2. Number of Indian students in district
3. Number of participants in local program
4. Part A funding level

C. Project Emphases and Activities

1. Project services (whether or not stress on: culture, counseling, home-school, or tutoring)

2. Percentage of dollars coming from Part A vs. other sources

3. Project goals (whether or not stress on: academic basic skills, dropout and absenteeism, counseling and attitudes toward school, cultural, students' self-concept, drug and alcohol abuse education, medical/dental/financial support, increased parent/community involvement, or in-service training).

D. Student-Level Variables

1. Length of time in program
2. Amount of help (extent received) from program
3. Type of help received (program component)
4. Grade level (or grade range of: 4-6, 7-9, 10-12); 4-6 and 7-12 also used
5. Age
6. Sex
7. Home language use
8. Pride in being an Indian
9. Perceived importance of Indian topics
10. Socioeconomic status (whether or not on free or subsidized lunch)

level data were routinely analyzed in terms of these variables, although results of these analyses were provided only where meaningful.

(b) The Role of Impact Analytic Techniques.[3] In essence, there were three major domains of impact. There were impacts occurring to: students, parents, and communities and schools districts. For the most part, the descriptive and analytic techniques used to investigate each domain were more similar to each other than across domains. Because of this, these three domains of impact were used below as the basis for discussing what analytic techniques were applied throughout the study.

(1) Student Impacts and Outcomes. The descriptive and analytic techniques used with this domain generally focused on determining what benefits students had obtained from participating in program activities.

Historical Trends in Academic Achievement Among Indian Students in Public Schools

These trends were assessed by using meta-analysis techniques to synthesize findings from a literature review of past studies of Indian student performance prior to the enactment in 1972 of the Indian Education Act, compared with subsequent levels of achievement. Studies conducted in four decades (1950-59, 1960-69, 1970-79, and 1980 to the present) generally involving public school settings were obtained.

Five strategies were used to locate studies, references, and test data. An ERIC search was conducted which located 90 relevant articles for the late 1960s and 1970s time periods. The Native American Research Information System (NARIS) maintained by the University of Oklahoma produced over 800 abstracts which were reviewed and which provided coverage for the 1970s time period.

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[3] See Appendix 4 (Methodological and Conceptual References) for citations dealing with the techniques used in this study.

Indian education authorities suggested a number of key reports and past studies which become the primary information sources for the mid-1960s and earlier periods. A series of contacts with state and local education agencies yielded 20 reports or data sources, only two of which had sufficient sample sizes and relevant analytic findings. This source provided late 1970s and early 1980s data. Finally, the present study of 6,425 students in 77 districts provided cross-sectional reading and mathematics standardized achievement test score data.

From this extensive set of sources came 100 promising studies, of which only 16 were suitable. Data from these were used for the meta-analysis by applying the following techniques:

- Percentile scores were converted to z-score equivalents or effect sizes, using normal curve conversion tables;
- Standard deviations were used from the Indian student group, if the comparison group standard deviation was unavailable; and
- Test norms were used when a study did not use a local comparison group, the preferable analytic unit for meta-analysis purposes.

Thus, standardized achievement test score results were then compared over time periods using effect sizes (in z-score format) reflecting the relative magnitude of Indian student academic performance compared to baseline groups (such as Indians vs. non-Indians, or Indians vs. all students). The "meta-analysis approach" pioneered by Glass and his colleagues (e.g., Smith and Glass, 1977),[4] and now widely used for synthesizing research evidence from diverse studies by using a common metric for comparison purposes, was also used here. Effect size comparisons across time periods were performed and graphed for the purpose of clarity.

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[4] Smith, M.L. & Glass, G. V. Meta-analysis of psychotherapy outcome studies. American Psychologist, 1977, 32, 752-760. (Also, see Educational Research Journal, 1980, 17, 419-433.)

Participation in Tutoring Programs

Academic impacts associated with participation in tutoring programs were measured by obtaining tutor ratings at the onset and end of the school year of student participation on their levels of reading, mathematics, writing, and social studies. Tutors were also asked to rate the students they were tutoring in their levels of self-confidence, interest in school work, classroom attendance, and conduct in school. The major impact variables, ratings on reading and mathematics, were analyzed using a very broad range of project, tutor, and student variables. Two-way cross-tabulations and multiple cross-break analyses were first performed to detect interactions and relationships, followed by a series of stepwise multiple linear regressions. Separate regression analyses were then conducted using post-test mathematics and reading scores as dependent variables. In all regressions, the corresponding academic pre-test (onset of school year) measure was forced into the regression equation first, as a covariate which controlled for initial levels of academic performance.

Ratings of Project-Related Academic Gains by Teachers, Staff, and Parents

This information was obtained by asking teachers of Indian students, project staff, and parents of Indian students to rate how much the project had helped to improve student performance in reading, language arts, and mathematics, and how much the project had helped to improve student grades. Four-point Likert rating scales were used. The scores on reading and language arts measures were combined to form an overall language arts score. The resulting impact measures were analyzed first descriptively and then more intensively. Thus, projects on or near reservations were compared to those in other rural areas, in urban areas or in metropolitan areas. The amount of effort that each project expended on basic skills instruction in language arts and mathematics was also used as a key cross-break variable.

Those formally spending effort to improve basic skills instruction were therefore compared with those projects reporting no hours of effort expended on basic skills. Projects were also classified by ratings of impact on student grades, and those projects in each category were compared in terms of the amount of effort spent on basic skills and other academic instruction. General linear modeling and correlational procedures were used to determine what factors were most associated with the mean impact ratings obtained from various classification variables. These means were also presented in multiple bar graph format so that relationships across the project classifications were more clearly evident.

Ratings by Students of Project-Related Academic Gains

Indian/Native students in the grades 7-12 study sample were asked to rate how much they had learned from the project teacher or tutor who taught two subjects in which they had received instruction during the 1981-82 school year: mathematics and reading or English language arts. Ratings were based on 5-point Likert rating scales. Data sources for cross-breaks also included relevant information from teacher and staff interview instruments, and project descriptor forms.

These students' impact ratings were analyzed by school district location, and the number of hours of project effort on reading and mathematics. They were also compared with the impact ratings of student gains in reading and mathematics made by teachers and project staff in the same school district. Thus the impact of Part A on academic improvement was analyzed from the distinct perspectives of students, teachers, and staff, all associated with the same project. For additional analyses, students were grouped by the levels of their ratings. The relative number of hours of effort spent to improve reading and mathematics, compared with performance in other academic areas, was determined, as was the relative extent to which students attributed learning to Part A teachers or tutors, compared with regular classroom teachers or reading and mathematics specialists. The unit of analysis was the secondary school Indian/Native student.

General linear modeling procedures were used to test differences between groups and whether they were associated with certain hypothesized variables.

Reading and Mathematics Test Score Patterns of Students

A cross-sectional design was used with standardized reading and mathematics test scores, collected from district files having a testing program in force during the Spring 1981. These test scores were converted to T-score format (based on publishers' standardization group means and standard deviations), and then used as dependent measures.

Descriptive analyses dealt with understanding the levels at which Indian/Native students were currently performing in reading and mathematics, and to what extent they differed from the general student population. Various means, frequency distributions, and cross-tabulations were used for these purposes. Impact analyses used multivariate general linear modeling approaches to test if a series of student-level and project-level demographic/background, contextual, attitudinal and project operations variables were meaningfully related to reading and mathematics scores. Since the achievement measures were correlated, multivariate modeling techniques were used to test whether these predictors were significantly related to both dependent measures on an overall basis.

Analyses were conducted, using the student and then aggregated scores to the project level as the unit of analysis. The general linear modeling statistical tests were further strengthened by including three covariates which controlled for participant-nonparticipant differences in geographic region, language used by students at home, and grade level. Analyses were conducted at the elementary (grades 4-6) and middle/high school (grades 7-12) levels, to determine if findings held for both grade levels. The amount of explained variation was examined to determine if meaningful relationships were found; the direction of findings was also examined.

Longitudinal Attendance Patterns

Trends in attendance of Indian/Native students over a four-year period were intensively examined. The mean attendance of the Indian students was compared with known and estimated national attendance data. Mean attendance levels of various subgroups were analyzed for trends across the four years and compared with the overall Indian student mean days of attendance trend line. Indian student attendance trends were analyzed by a series of variables, including: region, project population density and project location, school district size, grade level, school district size, sex, socioeconomic status, hours of project effort per student per year expended in improving attendance, and proportion of effort expended by the project during the school day to improve attendance. Attendance levels were also correlated with standardized reading and mathematics achievement test scores, parents' general satisfaction with their local projects, and parents' perception of school personnel sensitivity toward Indians.

Trend lines were used to analyze attendance patterns of mean attendance levels for particular subgroups of interest. Hierarchical model multiple regression and linear model procedures were used to determine how strongly selected variables were related to 1980 attendance of Indian students, after controlling for other factors. A regression analysis also was used to predict the national mean days of attendance for students in the United States beyond the year 1976, since national-level data were not collected for the 1977-80 time period. The trend line for Indian students was then compared with the national trend line. All analyses were based on the student as the unit of analysis; computer-generated graphs were used extensively in this phase of the study.

Project Impacts on Student Attendance

Ratings of the extent to which the Part A project had helped to improve attendance of Indian students in the school district were collected from teachers of Indian students, Part A project staff, and parents of Indian students. These ratings were combined within types of respondents to obtain average, project-levels of impact on attendance as reported by the three respondent groups. They were then analyzed by school district geographic location, and average hours of project effort per student per year expended on improving attendance. General linear model and correlational procedures were used to determine relationships of various predictors and these project-level ratings of project effectiveness in improving attendance.

Post-Secondary Knowledge, Aspirations, and Experiences

Students in grades 10-12 were asked a series of questions to assess what they knew of post-secondary educational opportunities, and what their aspirations for such education were. Knowledgeable sources in local projects and the community also were contacted to supply information on what former high school students (those who had attended school during the last ten years) actually were doing with their lives at present. A series of descriptive statistics was used to portray the typical patterns of key variables, by themselves and in relation to other variables. Impact analyses sought to relate the type and amount of knowledge, aspirations, and actual experiences to project contextual and program operation factors. Trend lines were examined to determine if Indian students' high school graduation rates were related to the operation of Part A programs.

Self-Concept and Attitude Toward School

During the fall and spring data collection periods, students in grades 4-12 were asked a series of rating scale items organized into attitude scales tapping such dimensions as academic self-concept, attitude toward school, global self-esteem, and pride in being Indian. The same items and scales were administered twice to determine the levels of attitudes, if students' mean attitude scale ratings shifted over the school year, and whether or not these levels were associated with participation in project activities and various personal characteristics, such as socioeconomic status or grade level.

Descriptive statistics focused on understanding the current levels of Indian/Native self-concept. Fall and spring scores were descriptively analyzed for their dispersion, typical value, and intercorrelation with project-level and student-level variables. Both scale scores and individual items were examined.

(2) Project Impacts. These analyses primarily dealt with suitability and effectiveness of project operations.

Appropriateness of Local Needs and Project Objectives

These analyses focused on assessing the appropriateness of the activities being performed by local projects, in terms of whether or not the special educational or culturally related academic needs of Indians/Natives were being effectively addressed. A number of types of information were gathered from project directors regarding their needs assessment procedures and what types of needs are considered the most salient and deserving attention. These variables were analyzed by using descriptive statistics such as frequency distributions, means, percentages, and selected cross-tabulations using key cross-break variables. Other sets of analyses related project needs to objectives and activities on a project by project basis to estimate the degree of appropriateness of project operations. Categories of expressed needs were separately analyzed to determine if the objectives and subsequent activities of projects for certain needs were relatively more "on target" than were their emphases for other needs.

Attitudes of the School and Community Toward Indians

Questionnaires administered to community and tribal leaders, parent committee members, project staff, and project directors contained items dealing with current levels of sensitivity of eight different groups (e.g., principals, elementary school teachers, school boards) toward Indians, and whether the respondents perceived any shift in such attitudes in the last few years. These rating scale items dealing with school climate were analyzed to determine what the current levels of sensitivity were overall, and for particular types of individuals. Analyses were also performed to determine if a consensus existed (across types of respondents) that a change in climate had occurred. These ratings were therefore analyzed by respondent, at the district level, and by selected key variables. The latter approach was used to assess if climate shifts had occurred relatively more often in certain types of projects than in others and thus might be associated with project operations.

(3) Indian Parent and Community Impacts. Descriptive statistics were extensively used to highlight what project activities were geared to enhancing parent and community involvement in local program operations, and determine the nature of that involvement.

More elaborate analysis techniques were used to determine what factors affected parents' general satisfaction with the Indian education project. Thus causal modeling path analysis techniques were used to test a hypothesized linkage of six factors. These factors dealt with: communication from the project to parents, parental participation in project activities, parent committee involvement in project operations, sensitivity of school personnel toward Indians, parental perceptions that Indian students' cultural needs were being met by project activities, and parental perceptions that the project helped to improve Indian students' academic performance.

Each causal factor was assumed to have a direct effect on the level of parents' general satisfaction with the project, while each predictor was hypothesized to be affected by all other predictors preceding its entry into the regression equation. Thus path analysis findings indicated the relative strength of each predictor (its direct effects) and what indirect effects were contributed by the other predictors due to their own correlations with causal factors. The sum of these indirect and direct effects equaled the total effect of each factor.

(c) Programs Currently Serving Indian Students

Another focus of the overall study methodology was the Alternate Resources Study; this study was designed to estimate how many Indian students were being served by various programs (state, local, and federal), with what resources, levels, and activities were being provided. Data from four independent samples of Part A-eligible school districts provided estimates of this information.

Analyses dealt with seven types of federal, state, and local programs to clarify the differences across such programs, and pinpoint which programs were used relatively more than others to serve Indians. Thus, frequency distributions, percentages, means and medians, cross-tabulations, and related statistical approaches were used to provide summary statistics on these topics.

5. Limitations of the Methodology

Finally, this report should note that there were a number of factors relating to the Part A Program and this evaluation which limited the ability to draw unambiguous conclusions from the study's results. Among the more important are:

- The Part A Program is merely one of many special programs which serve Indian students. Chapter 1, Title VII, Johnson O'Malley, and other federal programs all provide special services to Indians, and it is virtually impossible to separate the effects of these various programs from each other and from the regular school program.
- Part A projects are relatively small, and they provide a diverse mix of program services. Thus, impacts may be quite particularistic and may be hidden by grouped data or the application of general criteria.
- The evaluation was conducted many years after most Part A projects were initiated. Many of the greatest impacts of Part A projects may have occurred prior to the evaluation, and projects may simply be sustaining earlier gains. The lack of pre-Part A baseline data on many variables made interpretation of such effects problematic.
- The evaluation was limited in its time frame for collecting data. Fall and spring measures were collected on a number of student measures, but the average time between measurements was only approximately six months.

This may not have been sufficient time for impacts to occur on some student measures (e.g., attitudes and tutoring).

- It was difficult to classify students based on their levels of participation in Part A activities. Some students were not aware of which supplemental activities were related to Part A, and project staff at times had difficulties in specifying which students had taken part in open programs such as cultural assemblies. In addition, some project activities were provided to the school or community as a whole, so that the subject groups for such were difficult to specify. The effectiveness of staff and personnel in providing these services, or the responsiveness of students to these services, also could not be directly assessed.
- Some of the impact measures had not been previously normed on Indian populations. The evaluation was thus partially exploratory in nature, providing new evidence on response characteristics of Indian students.

Some of these limitations are particular to the evaluation, but many are generic to educational evaluations. Overlap of programs, diversity of objectives, and lack of baseline information are issues that confront many educational evaluators. Despite these limitations, however, the evaluation is believed to have provided reasonably accurate descriptions and insights into the Part A Indian Education Program and its outcomes.

STUDY APPENDICES

Appendix 1: Major and Related Study Questions for the Indian Education Impact Evaluation of Part A Projects

Appendix 2: Members of the Indian Education Evaluation Study Technical Advisory Panel

Appendix 3: School Districts Included in the Local Projects Evaluation Sample

Appendix 4: Methodological and Conceptual References

APPENDIX 1

MAJOR AND RELATED STUDY QUESTIONS FOR THE INDIAN EDUCATION IMPACT EVALUATION OF PART A PROJECTS

APPENDIX 1

MAJOR AND RELATED STUDY QUESTIONS FOR THE INDIAN EDUCATION IMPACT EVALUATION OF PART A PROJECTS

Broad Study Issue

To what degree does the Indian Education Act Part A Entitlement Program contribute positively to meeting the special educational and culturally related academic needs of American Indian/Alaska Native children and youth?

Major Study Questions

1. What are the organizational, fiscal, and human resources available to Part A projects? How do projects utilize these resources?

    a. What are the size and characteristics of project staffs? To what degree do projects employ staff who are American Indians or Alaska Natives?

    b. What resources are utilized by Indian Education projects funded under the Part A Entitlement Program?

    c. To what degree do projects use funds other than those granted them under the Part A Program?

    d. How do the actual resources utilized for Title IV, Part A Projects compare to the respective grantee budgets?

    e. What types of materials do Part A projects use? To what degree do these materials reflect American Indian/Alaska Native cultures?

    f. What types of assistance do Part A projects receive from the federal Office of Indian Education and the Indian Education Technical Resource Centers? In what ways do state education agencies help Part A projects carry out their responsibilities?

g. To what degree do Part A projects utilize the human and other resources available in the American Indian/Alaska Native communities they serve?

h. What types of assistance do LEAs provide their Part A projects? How can the quality of LEA assistance be characterized?

2. To what extent do the objectives of projects funded under the Part A Entitlement Program address the special educational and/or culturally related academic needs of American Indian/Alaska Native children?

a. What are the objectives of projects funded under the Indian Education Act Part A Entitlement Program? How do project objectives relate to project characteristics?

b. To what extent are Part A project objectives consistent with the characteristics and needs of the American Indian/Alaska Native students the projects serve?

c. How are student needs defined? How comprehensive are needs assessment procedures?

d. To what extent is there agreement among project staff, parent committee members, the broader American Indian/Alaska Native community, and sponsoring LEAs about the objectives of Part A projects?

e. Are there appropriate student needs which Part A projects are unable to address? How could the gap between needs and services be filled?

f. To what extent are project objectives and activities consistent with Congressional intent?

3. How have Part A project activities been implemented?

a. What are the activities of Part A projects?

b. Who is being served by Part A projects?

c. How are American Indian/Alaska Native students identified? What has been the impact of regulations such as those relating to the use of OE Form No. 506?

d. To what extent are students who are neither American Indians nor Alaska Natives receiving services funded by Part A Entitlement monies? To what extent is the provision of services to non-targeted students inappropriate?

e. To what degree are project services integrated with other school programs and activities?

f. To what extent do project activities include the parents of American Indian/Alaska Native students and members of their communities? Do certain types of activities or project characteristics lead to higher levels of parent and community involvement?

g. What roles do parent committees play in project operations? Have these changed since the Education Admendment of 1978?

h. To what degree do LEAs foster a supportive environment for project activities?

i. How do activities funded by the Part A Entitlement Program differ from those provided with monies available through Johnson O'Malley and other programs? Do LEAs exclude American Indian/Alaska Native children from programs such as Title I because of the availability of parallel services under the Part A program?

j. How actively do American Indian/Alaska Native students participate in project activities?

k. What is the quality of the relationship between parent committees and LEAs?

l. What types of support services enhance project implementation? How does the need for support services differ with the characteristics of a Part A project?

m. What has been the quality of project level evaluations? To what extent, and in what ways have projects found these evaluations useful?

4. What are the impacts of Part A projects on American Indian/Alaska Native students?

   a. How do projects affect such areas as student: understanding and appreciation of American Indian/Native Alaska cultures; attitudes toward school and education; absenteeism; dropout and graduation rates; knowledge and pursuit of postsecondary opportunities; classroom behaviors; participation in school activities; grade promotion; and student achievement in reading and mathematics?

   b. Do project impacts on students relate to project characteristics including size, project resources, project activities, level and intensity of student participation, levels of parent or American Indian/Alaska Native community involvement, student or community characteristics, or other variables?

   c. Are project impacts a function of differing combinations of activities and/or objectives?

5. What impacts do Part A projects have on the parents of American Indian/Alaska Native children and on the American Indian/Alaska Native communities projects serve?

   a. How do projects affect such areas as parent and community attitudes toward education and public school districts; parent involvement in and support of a student's school activities, and project, class, school, and district policies and practices?

   b. Do varying degrees of parent and community involvement relate to project impacts?

   c. How have Part A projects affected the policies and activities of American Indian/Alaska Native tribes and organizations, especially those in that are education-related?

6. What impacts do Part A projects have upon their LEAs?

   a. How have Part A projects affected teachers and other LEA personnel in relation to knowledge of American Indian/Alaska Native history and culture and these individuals' senstivity to the unique characteristics and special needs of American Indian/Alaska Native students?

   b. To what degree have Part A projects led to the increased employment of American Indian/Alaska Native teachers, counselors, and school administrators in LEAs and changes in employment policies and practices?

   c. How have Part A projects affected how LEA curricula, especially in the areas of U.S. history and social studies, deal with American Indians/Alaska Natives?

   d. In what ways have Part A projects contributed to the increased involvement of American Indians/Alaska Natives in school or district-wide policy-making?

   e. To what degree have Part A projects affected changes in school or district policies or practices to encourage increased American Indian/Alaska Native participation in school, extracurricular, and parent/community activities?

7. How do federal and state level activities, especially those of the Office of Indian Education, affect Part A projects?

   a. What has been the congressional intent for and level of interest and involvement in the Indian Education Act Part A Entitlement Program?

   b. What have been the major objectives, resources, activities and constraints of OIE?

   c. What kinds of communication links exist between Part A projects and OIE? How are these used?

   d. In what ways have OIE activities affected Part A projects? How could OIE play a more positive role?

e. To what degree do Part A projects operate under erroneous interpretations of the Part A programs rules and regulations? What actions has OIE taken to correct project misconceptions?

f. What changes in legislation and regulations would enhance the ability of the Part A Program to meet the special educational and culturally related academic needs of American Indian/Alaska Native students?

g. In what ways could SEAs positively assist Part A projects? How have Part A projects affected their SEAs?

h. What impacts have Part A projects had on SEA activities in the area of Indian Education?

8. What is The Total Amount of Federal Education Funds Expended by Local School Districts on American Indian/Alaska Native Students in Grades K-12 and How Many of These Students Are Receiving Various Types of Special Services?

a. What is the total amount of federal education funds expended by local school districts on American Indian/Alaska Native students?

b. How many American Indian/Alaska Native students are served by these funds?

c. What types of special services provided by these funds do American Indian/Alaska Native students receive?

APPENDIX 2

MEMBERS OF THE INDIAN EDUCATION EVALUATION STUDY TECHNICAL ADVISORY PANEL

APPENDIX 2

MEMBERS OF THE INDIAN EDUCATION EVALUATION STUDY TECHNICAL ADVISORY PANEL

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APPENDIX 3

SCHOOL DISTRICTS INCLUDED IN THE LOCAL EVALUATION SAMPLE

APPENDIX 3

SCHOOL DISTRICTS INCLUDED IN THE LOCAL PROJECTS EVALUATION SAMPLE

STATE	DISTRICT
Alabama	Jackson County
Alaska	Anchorage Area Greater Borough, Gateway Borough, Iditorod Area, Kake City, Matsanuka/Susitna Borough, Lower Yukon, Unalaska City
Arizona	Marana High School, Scottsdale, Page Unified, Peach Springs Elementary, Puerco Elementary #018, Sunnyside Unified #12, Tuba City Unified #15, Union Elementary #062, Whiteriver Unified #20, Window Rock Elementary #008
California	Clovis Unified, Fairfield-Suisun Public School, Fontana Unified, Huntington Beach Union High School, Oakland City Unified, Oroville Union, San Juan Unified, San Jacinto Unified, Sacramento City Unified, San Pasqual Valley Unified, Shasta Lake Union Elementary, Tracy Elementary
Connecticut	Bridgeport
Florida	Dade County
Idaho	Blackfoot #55
Illinois	Rockford
Kansas	Lawrence Public Schools
Louisiana	La Fourche Parish
Maine	Maine Adm. #29
Michigan	Brimley, Escanaba Area Public Schools, Grade Haven City, Marquette City, Mason Consolidated, Lake Shore, Wayne-Westland Community School
Minnesota	Robbinsdale Independent #281, Frazee, Duluth Independent #709, Waubun Independent #435
Montana	Box Elder Elementary #55, Brockton Elementary #55, Hays/Lodge Pole, Lame Deer Elementary, Wyola Elementary #29
Nebraska	Falls City Public School

STATE	DISTRICT
Nevada	White Pine County
New Jersey	Mahwah Township
New Mexico	Bernalillo, Grants Municipal Schools, Gallup-McKinley County, Taos
New York	Gowanda, Buffalo
North Carolina	Columbus County, Robeson County, Graham County
North Dakota	Couture #27, Williston
Oklahoma	Boswell Elementary #1, Broken Bow, Checotah I-19, Commerce, Edmond, Southside, El Reno #34, Fairfax, Idabel I-5, Locust Grove, McAlester D-80, Norwood, Oklahoma City, McCurtain County, Peavine #19, Ardmore, Okmulgee, Purcell, Ryan, Geary, Talihina, Tri-County Area AVTS., Tuskahoma, Whitebead, Zion #28
Oregon	Klamath County Unified, Lincoln County, Umatilla County Intermediate
South Dakota	Rapid City, Todd County, Sisseton, Lake Andes
Texas	Dallas Intermediate
Utah	San Juan, Tooele
Washington	Bellingham #501, Goldendale, Hoquiam #28, Nespelem #14, Renton D-403, Toutle Lake #130, Wapato #207
Wisconsin	LaCrosse Joint, Flambeau #1, Hayward Community
Wyoming	Fremont County #25

APPENDIX 4

METHODOLOGICAL AND CONCEPTUAL REFERENCES

APPENDIX 4

METHODOLOGICAL AND CONCEPTUAL REFERENCES

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